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ComputerWeekly

Thursday, March 17, 1983

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Watchdog barks at nuclear plans

by George Black

THE CEGB was slammed last week for not giving the public's nuclear watchdog all the details of its computer safety systems for the proposed pressurised water reactor at Sizewell.

Chief inspector of the Nuclear Installations Inspectorate Ron Anthony said there was "a fundamental criticism of the Central Electricity Generating Board for its failure to provide all the information needed".

And a report issued by the NII last week adds: "The Inspectorate is still finding it particularly difficult not having a schedule and specification for the complete protection system. This is basic information which should have been provided in the preconstruction report which will not be available until September."

The inquiry into the £1.2 billion PWR scheme is now in its ninth week at the Snape Maltings in East Anglia.

Controls are to be based on the WIPS integrated protection system from Westinghouse, the main contractor. But similar, software-based systems devised by the American General Electric failed to gain approval by US authorities (CW, January 13).

The NII said its licence to the CEGB to go ahead with the controversial construction plan was dependent on its being convinced the plant would be safe, not on the government accepting the report from the inspector, Sir Frank Layfield.

Software controls are to be used to ensure that the system cuts out if the water cooling the reactor under high pressure overheats and turns to steam.

But objectors have been arguing that the safety of such an approach cannot be guaranteed because the programs will not be written for up to eight years.

The NII has now accepted a microprocessor based system. Friends of the Earth, which is heading the opposition, does not dispute the use of microprocessors, but questions how it will be done. Its safety researcher, William Cannell, said they wanted a copy of the WIPS Review, written by the National Nuclear Corporation, which would build the reactor under licence from Westinghouse.

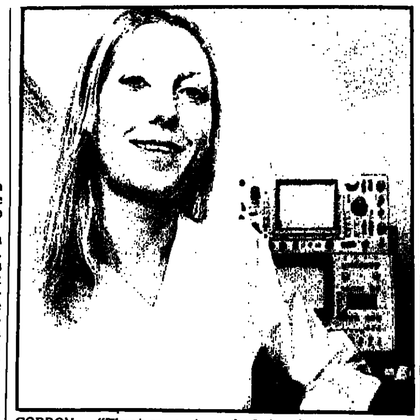
"But the CEGB has restricted release of the document and we don't know why," he said. "It makes us very suspicious. We may have to ask the inspector to let us see it. I'd be surprised if they could get away with not showing it to us."

Safety assessments were based on Westinghouse's standard nuclear unit power plant system (SNUPPS), he said. But Friends of the Earth was dubious that SNUPPS, which had gained a US licence, could be reproduced since the introduction of many changes.

The CEGB was invited to comment but did not respond.

Unwritten software is key to Sizewell

From CW's front page on January 13.



GORDON . . . "There is an emerging market for integrity".

Systime 32-bit micro assists the love of Ada

by Robert Parry

SYSTEMS manufacturer Systime is to bring out a high performance 32-bit microcomputer this year. It will be built around Intel's iAPX 432 chip set, and will be aimed initially at people wanting an Ada engine – a vehicle for developing and executing Ada programs.

Other applications for the machine will be as a subsystem embedded within a computer system and dedicated to a particular task, such as a database server, and eventually as a powerful general purpose 32-bit computer.

"We saw great potential in the iAPX 432, particularly the architecture which allows transparent multi-processing and failsafe possibilities," says Systime's director of R&D Ian McNeill. To take advantage of the chip set Systime signed up High Integrity Systems (HIS) of Sawbridgeworth, which has already designed and built board level products using the 432.

Packaged systems should appear by the autumn, says McNeill, though progress is now awaiting the release due in September by Intel of the third version of the 432 chip set and a new Ada compiler.

"There is an emerging market for integrity," says HIS managing director Daphne Gordon. "Some people need systems to keep going under most situations, and don't want to pay an arm and a leg for it."

IBM joint venture with Matsushita in jeopardy

by Kevin Cahill

DESPITE the launch this week of a small computer by IBM Japan under an OEM agreement with Matsushita, the long-awaited joint venture between the two companies is in jeopardy.

This week's machine launch, believed to be an eight- or 16-bit microcomputer, is a dedicated Japanese word processor. The machine's keyboard has standard qwerty characters but is principally adapted for Japan's Kana character range.

The launch has taken commentators in Japan by surprise as they await the materialisation of the Peanut computer which the two companies have allegedly been developing for 18 months.

As long ago as October 1981 there were widespread rumours of a joint venture between Matsushita and IBM to produce a cheap version of the IBM Personal Computer.

As recently as two months ago, informal comment from both companies seemed to indicate that a deal was close. However, there are strong indications in Tokyo that the board of Matsushita is still discussing whether or not to enter a joint venture deal with IBM.

The reason for the loss of enthusiasm on Matsushita's part is believed to be the residual effect of the action by IBM against giant Hitachi and Mitsubishi.

IBM was widely admired in the US for its firm stance in bringing criminal and civil lawsuits against Hitachi for alleged theft of details of its operating systems. The action that was admired in the US, however, caused IBM enormous difficulties in Japan, including delays and cancellations of orders.

Luck decides who gets first 3705 replacements

by John Kavanagh

IBM users face a lucky dip for first deliveries of the company's 3725 communications controller, launched last week. The machine was welcomed by users as a logical upgrade for the 3705 but described as disappointing by competitors.

Demand for new IBM products has led to lotteries for the 4300, 3033 and 308X computer ranges and 3375 and 3380 disc systems.

The long-awaited 3725 offers better performance than the 3705 at roughly the same cost but with few new facilities. Memory size is doubled to one Mbyte and the 3725 can handle networks 3.5 times bigger than those supported by the 3705. It can take 256 lines – the same as ICL's network processor – and eight mainframes.

One of the main new features is the console, which enables users to diagnose problems and maintain the network through a display and keyboard.. Users only communicate with the 3705 by setting switches.

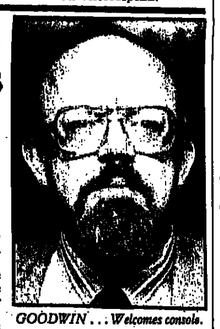
The 3275 runs a new version of IBM's existing network control software which simplifies problem solving and setting up a network. It can be used with 3705s in networks running under IBM's SNA network architecture.

IBM says the 3725 will replace 3705s in big installations but the 3705 "still has its place in smaller networks".

John Grant, president of the IBM Users' Association, said users would give the product a favourable response. "It's not revolutionary but a sensible progression for people with 3705s," he said.

George Goodwin, another users' association officer, welcomed the console in particular – but put this new feature in perspective: "In effect the fact that the 3705 didn't have a console was a minus, so this just brings IBM up to the point where it should have been already."

■ Leader comment – Page 17.



GOODWIN . . . Welcomes console.

IAL sold to STC for £50m

BRITISH Airways last week sold International Aeradio (IAL), with its £40 million annual revenue from computing interests, to telecommunications giant Standard Telephones and Cables.

STC, one of Britain's biggest companies, bought the airline's 98.9% holding for £50 million, and will inject a further £10 million into the IAL pension fund. IAL will keep its name and structure, combining with its new parent only for particular projects.

The position of IAL Gemini, the child of IAL and the top French software house Cap-Gemini-Sogeti, is said to be unaffected.

An IAL spokesman said: "Now we have a shareholder which is enthusiastic about us and has the resources to back our enterprise. BA just didn't have the money to do anything for us."

IAL, which employs 4,500 people, had £10 million profit last year on a £133 million turnover.

Computing functions play an important part in IAL's success. One of its key products is the Stratis voice communications switching system which the Civil Aviation Authority bought for £2.5 million in 1981.

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NEC heads for IBM compatibility

NEC, Japan's number two computer maker, is likely to make a move to IBM compatibility within a year. The company currently manufactures a complete micro to large mainframe range of computer equipment which is not IBM compatible. Commentators in Tokyo give two reasons for NEC's likely course of action.

The company manufactures the largest mainframe computer currently available, called the ACOS 1000. The machine, which has an instruction rating of 54 million instructions per second (mips), consists of four tightly-coupled central processing units, each with a mips rating of 15. The company announced that machine early last year and has so far sold only one version to a university in Japan.

According to Japan's leading computer newspaper, Nikkei Computer, the company was forced to give a discount of 70% in order to sell the machine. The difficulties of selling equipment which is not IBM compatible and maintaining more growth at the top end of the business persuaded NEC's executive to reconsider its strategy.

The second signal that the company might be thinking of going IBM compatible was the link between Sumitomo and Dr. Gene Amdahl's new company, Trilogy. The deal makes Sumitomo, a company with no previous computer experience, the worldwide marketing agent for the IBM compatible Trilogy supercomputer due for delivery in 1985.

Sumitomo, however, is the majority shareholder in NEC and has designated that company to head a massive computer-based automation programme within the vast Sumitomo group.

While NEC executives formally say that the company is committed to its existing user base and refuse to be drawn about the implications of the Sumitomo deal, they are known to view with great satisfaction the link between their parent company and Dr Gene Amdahl.

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COOPER . . . "We may have to quadruple our turnover to do it".

BT in talks with US giants after late 'home' deliveries

Jefferson jolt for UK 'cosy comms club'

by John Kavanagh

UK COMMUNICATIONS firms were reeling this week from a blistering attack on their delivery performance by British Telecom chairman Sir George Jefferson. And Industry Secretary Patrick Jenkin backed him by giving a chilling warning of the survival prospects for UK firms.

BT is now talking to US giants IBM and American Telephone and Telegraph about the sale of US equipment in the UK. Such a move would severely jolt BT's current main suppliers, including Plessey, GEC and STC, described by Jenkin as "a cosy club".

Jefferson told the Telecommunication Engineering and Manufacturing Association that in the last year 60% of the 250 main orders for exchange equipment had been delivered over three months late. And the average delay on transmission equipment orders was over five months.

As a result there had been a £100 million shortfall in BT's capital spending. This partly explains why BT's external borrowings limit has been cut by £196 million for 1983-84 (see page 3).

The possibility of BT manufacturing its own equipment is not ruled out by the government's Bill to ease its monopoly.

Jefferson sounded a warning here for UK manufacturers, saying that if BT had not had its own factories to refurbish telephones it would have been a million telephones short over the last year because of the failure of UK industry to meet demand.

BT later said its policy was to buy British where possible – but if UK industry could not meet deadlines it could look elsewhere.

AT&T and IBM confirmed they were talking to BT about the supply of US equipment.

IBM UK managing director Eddie Nixon said recently that the company welcomed the plans to free BT's monopoly: The company expected a share of the private investment in new services.

Jenkin, speaking at the same TEMA meeting as Jefferson, referred to the "chilling" fact that the UK's share of the world communications market had dropped from 25% to 6% in less than 20 years.

"Today no company which is just a telecommunications company can survive," he said. "Your markets will be attacked by companies from other industries applying their new technologies to the needs of your customers. All the regulatory barriers in the world cannot stop this happening.

"In Europe some have tried to stop the world and to protect their industries. The results are bound to lead to technological stagnation and loss of world market share."

Jenkin added that UK firms "must gain a niche" in the US if they were to become "world companies".

JEFFERSON . . . Warning for UK manufacturers.

Jobs pledge to STC workers

by Donald Kennett

STANDARD Telephones & Cables promises to keep its 35,000 strong workforce employed for the foreseeable future, even if it has to boost turnover by a factor of four.

Neville Cooper, STC administration director and the author of a 1981 report to the government on the links between schools and industry, said, "We may have to quadruple our turnover over the next decade to do it, but we believe it is one of those occasions when what is socially right is also commercially correct."

The company had decided on this policy between five and 10 years ago and had reaffirmed it at intervals since then, he said. The policy had been confirmed yet again at a recent executive meeting.

"Obviously in the end if we are going to maintain a proper working life for people, industry and commerce as a whole will have to maintain employment, although the work will be different – more intellectual. There will be a substantial shift.

"A lot of the predictions about jobs passing from the manufacturing sector to the services sector and so on are grossly exaggerated. Employment isn't going to come from today's products but tomorrow's which are unknowable!

Cooper described the company's policy as he announced a £750,000 programme of educational activities which includes the STC-sponsored telecommunications gallery opened last week at the Science Museum by Prince Charles. The programme was originally planned to celebrate the company's centenary this year, but it has now been dedicated to the UN World Communications Year campaign to spread awareness of communications technology in advanced countries and the use of it in developing ones.

Other parts of the STC programme are books, films, wallcharts and worksheets for schools and the Faraday lecture on optical fibre communications which has been touring the country since last October. It will finish up in London in May and demand for the free tickets to it has been such that the number of performances have been doubled in some towns.

STC estimates that more than 100,000 people have already seen the Faraday lecture and that 5,000 visited the Science Museum gallery in the first two days.

Alvey decision delayed

by Kevin Cahill

THE government has delayed a decision on the £350 million Alvey committee programme for UK computer-related research and development. Treasury officials appear to be balking at the government's proposed share – £250 million over five years.

No mention was made of Alvey in last week's Budget, and Industry Minister Patrick Jenkin's promise of an announcement soon was tempered by a reference to the dismal track record of government in "big science".

Jenkin, who outlined the Chancellor's "innovation proposals" the day after the Budget, said the Alvey proposals were a wholly new concept in collaboration at which the government was looking very closely. He laid a decision on the future of Alvey squarely on the Prime Minister's doorstep.

The Prime Minister, Jenkin said, "is taking a very close interest".

Sir Geoffrey Howe announced a £185 million "innovation package" in his Budget speech.

■ Full budget details, page 9. And see also our Leader comment, page 17.

£2m DEC minis for Barclays

BARCLAY'S Bank has ordered over £2 million worth of hardware from Digital Equipment. The contract is for 150 PDP-11/23 minicomputers to act as branch controllers, which will be installed by the end of the year. The machines will form the basis of an information processing system that could link 500 branches by 1985.

The bank is looking at a range of possible applications, including office automation, word processing and electronic mail.

■ Top banks plan control of cashless society – back page.

Chips recalled

US CHIP builder Motorola has pulled around two million 64K dynamic RAMs out of stock because of a doubled failure rate on a batch of parts. Only one of Motorola's two 64K dRAM manufacturing plants is affected.

Darlington Itec

TECHNOLOGY Minister Kenneth Baker last week promised that one of the 150 new information technology centres would be set up in Darlington.

Research centre

ICL, Cii Honeywell Bull and Siemens are holding talks aimed at setting up a joint research centre for advanced systems, components and materials. The centre's work would be linked to the EEC Esprit programme of collaboration in strategic areas of electronics, and software houses may be invited to join it.

Man of the Year

CLIVE Sinclair, founder and chairman of Sinclair Research, is the 13th Guardian Young Businessman of the Year. Sinclair, 42, founded Sinclair Research in 1979.

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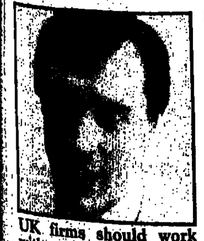
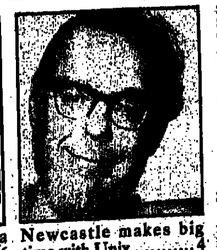


UK firms should work with universities 3

West must make Japan a partner 16



Newcastle makes big time with Unix 4

Software File 10
Software Analysis 11
Company News 12
Micro News 13
Profile, Platform 16
Downtime by Chad 16
Liveware File 16
Leaders, Letters 17
Workplace, Puzzler 18
People, Diary 19
Japan 20/23
Operating systems 24
Asian computer project 25
Marketplace 27/28
Leipzig Fair 28
Products 29/30
Sales Bit 53
Job Vacancies 31/55

CHISHOLM . . . To oversee CAP's new acquisition.

CAP buys defence systems house

by George Black

MAJOR UK software and systems house CAP is taking over Stephen Howe Ltd, of New Malden in Surrey, to strengthen its hand in the defence market.

Stephen Howe Ltd, which had a turnover of £847,000 in its last financial year, will continue to operate as a separate company under its own name, but will be managed by CAP Scientific.

CAP group communications director Alan Benjamin said it had been looking for a way into the booming avionics field for some time and saw the Surrey specialist team as an excellent opportunity. Howe's knowhow is mainly in avionics, reliability engineering and military studies. CAP is a registered defence contractor and both firms are involved in the British defence software consortium (BDS), which also includes ICL, SPL and Leasco, formed to capitalise on the NATO systems market. The BDS is part of a larger international grouping known as Softlant.

Howe, who heads a team of about 20 staff, has been retained by CAP as a technical consultant for the first year after the takeover. His company will be overseen by CAP Scientific's managing director John Chisholm.

Howe's business has been expanding rapidly in the past two years and the contracts coming in are thought to have been too big for it to handle without the support of a larger organisation.

CAP made a good recovery last year from its previous bad patch, boosting turnover to just over £14 million, with £500,000 profit, aided by defence work. It has been involved in developing the use of the defence industry's computer language Ada, and also with SPL in the use of Coral.

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DoI treads on its own support

by John Riley

THE Department of Industry may have been treading on its own toes while trying to attract British industry to its support schemes, according to a top civil servant.

John Noyes, assistant secretary in the DoI, and responsible for administering the government's £27 million schemes to stimulate awareness and use of computer aided engineering CAE, was speaking last week at a computer graphics congress in Berlin.

"So far a number of lessons have been learned," he said. "The most fundamental has been how difficult it is to attract the client's interest against so many competing activities, including the Department's own MAP (Microelectronics Applications Project) and information technology campaigns."

"Although coverage in exhibitions, national newspapers and technical and professional journals has been good, its effect has been limited. Either the level has to be raised above the noise, for example using television, or more selective methods adopted.

"Currently we are pursuing the latter course with refined mailing lists and approaching executives by name."

The next lesson learned by the DoI was that local knowledge could be exploited through Chambers of Commerce, and because the demonstration centres are spread throughout the country, their managers could play a part in the promotion activity.

Noyes said: "They want success for their own centre and are therefore well motivated for promoting the programmes.

"However good one believes the programmes may be, errors, omissions or poor material can easily slip through," he added. "Control of quality is essential at all stages, material for seminars and training courses, speakers, brochures, enquiry points and information service.

"One should not accept that the occasional slip-up will be overlooked. They will not and may well prejudice the entire programme. Good performances unfortunately do not attract the same level of interest."

The main schemes for awareness in Computer Aided Engineering are the £6 million CAD/CAM (Computer Aided Design/Manufacture) programme directed at mechanical and electrical engineering, started in October 1981, and the £9 million CADMAT (Computer Aided Design, Manufacture and Test) for electronics, started in February 1982. A further £12 million was put into a programme of investment support in July 1982.

"The real test of success is in the benefits companies will reap through adopting computer aided engineering," said Noyes.

Week in Parliament

33 companies register for value-added networks

by our Parliamentary Correspondent

THE Budget debate took up most of last week in the Commons, leaving little time for high technology. But the Lords were kept busy with the Data Protection Bill, and discussed an attempt to include a clause forcing employers to open manual records to inspection when they are referred to in computer records (see page 8).

But before the Budget, Under Secretary of State for Industry John Butcher told the Commons that 33 companies had so far registered under the general licence for value-added networks.

In reply to a question, Butcher said the Department of Industry had supported several viewdata demonstration projects during 1982, Information Technology Year. These included Seaview, a project linking ship to shore via satellite, and Prestel sets at public places in Brighton, Kingston-on-Thames and Newcastle.

Butcher also told the Commons that Teletex, British Telecom's text communication service to link word processors and computer terminals by telephone, would begin later this year. The development would place the UK well in the international market, said Butcher.

But Doug Hoyle (Labour, Warrington) suggested that far from being well placed, the country was falling behind many competitors in information technology, and that more money was needed.

Butcher retorted that the present government had shifted huge resources to new technologies.

Information Technology Minister Kenneth Baker told the Commons Standing Committee on the Telecommunications Bill that the director-general of telecommunications would soon be given a statutory role in advising on licensing functions covered by the Wireless Telegraphy Act.

Baker added that the government had inserted into the Telecommunications Bill a provision to make it as difficult as possible for a future Labour government to renationalise British Telecom. The provision will require major legislation to be introduced to bring the loosened parts of BT together.

■ For a full analysis of the Budget as it affects information technology turn to page 9.

Cincom to include new-look Total in Vax software launch

THE spring launch of a new range of software for the DEC Vax minicomputer is to be the first in a rash of new products from US database supplier Cincom. The DEC software, to be called Ultrasystem, is being built at Cincom's UK research and development centre, and includes a "stem to stern" rewrite of the Total database package.

Also to come soon from Cincom is a new online graphics facility called Mangraph, and a new database system which will eventually replace and will be upward compatible with Total. Cincom says it has over 5,500 existing database customers, mainly in IBM sites.

Total Magic is another new product on the cards. It will include the Total database, the new graphics facility, and Cincom's Mantis application development system.

Cincom also has plans to put Mantis on the Vax. Mantis, which was released in the UK in June 1981, has some 50 users over here in IBM sites.

An older version of the Total database has been running on the Vax for some time. Worldwide Cincom has some 500 PDP and Vax users of Total.

The strategy behind the Ultrasystem is to make IBM and Vax systems more compatible. Cincom wants to be seen as the "IBM/Vax connection", says Tom Nies, Cincom president. The Ultrasystem database commands will be 100% compatible with other systems, Nies says.

He also said that the TIS total information system was soon to be heavily pushed in Europe after successful implementation in US.

■ Claire Gooding adds: Cincom is now in a strong position to grab back the slice of its market won by rival database firm Cullinane.

TIS, Cincom's strategic product for the Eighties, has been slow to become a commercial reality, although it was announced in the late Seventies. This has given Cullinane the chance to nip in with alternatives to the traditional hierarchical database.

Cullinane claims to have pioneered the approach by which the data dictionary becomes the central tool, surrounded by a set of integrated productivity aids.

Cullinane (now renamed Cullinet to reflect its networking interests) has been quick to woo Cincom's customer base with the data dictionary solution.

Cincom's heavy investment in acquired software and in-house development now gives it the chance to leapfrog the "data dictionary" set with a new solution for the vast numbers already using Total.

It would be surprising if the new TIS database solution did not cater for distributed and networked database, heavy usage by inexperienced end users, and include some relational-like features.

Cheap entry to IBM PC — for some

by Robert Parry

IBM 3270 terminal users in the US are to get cheap personal computing but UK users will have to wait.

A new facility on the 3270 allows it to be connected to the systems unit of an IBM PC, letting it act as a personal computer without duplicating keyboard or screen hardware.

At the same time new models have been brought into the 3270 range, to be available for UK volume delivery by late summer.

The personal computing capability is field installable, so existing 3270 users can easily cash in on local standalone microcomputing at a considerably reduced price. It is easy to switch between using the 3270 as a personal computer and as a terminal connected into a mainframe system.

So far the facility is not available in the UK. This is thought to be because of technical considerations to do with differences between ROMs in US and UK versions of the PC. But when it does come here, the saving for existing 3270 users should be several hundred pounds off the £2,000 minimum self-sufficient system price.

The PC systems unit is the box containing the processor board and memory, with disc drives and expansion slots for extra memory, printer, communications or game adaptors. It runs an implementation of Microsoft's MS-DOS operating system, giving access to a wide range of off-the-shelf applications software.

IBM sees the 3920 information panel being used to best advantage in program development, where the user can access multiple subsystems concurrently.

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BULLOCK . . . Firms should talk to universities.

'UK firms should work more with universities'

by John Kavanagh

BIG UK companies are failing to take advantage of universities' high-technology expertise. They should look at the success their US competitors have had in working with universities and small specialist firms rather than setting up massive research departments.

That is the view of Matthew Bullock, a senior Barclays Bank manager involved in the setting up and financing of the now 81-strong Cambridge Computing group. He is to report on a nine-week US study tour at London University's Imperial College today (Thursday).

Bullock questions the value of universities setting up science parks to attract industry to their campuses, and argues that it is more important for those universities to allow their academics to do outside consultancy work.

And he believes UK government officials and MPs do not fully recognise universities as prime sources of technological innovation. This, together with the slow-moving nature of government departments, means the UK government will not be a major force in technology transfer.

By contrast the US government has had a big impact on fledgling companies by giving them long-term contracts which have made them financially stable from the start.

Bullock says the US has seen the birth of many small firms started by university people. They start as consultancies and gradually move into products. They need little backing and management know-how and are less likely to fail than product firms. That is why venture capital companies are keen to invest in them.

But most of these firms are eventually bought by their big customers as a way of getting into new technologies.

"This has proved very important to US companies — but UK firms don't think in these terms," Bullock said. "Instead they set up big internal research departments. They need to look at the way US companies have successfully bought in the expertise.

Leader comment — Page 17

"UK companies are not interested in talking to universities. But this has got to come. Perhaps it will come eventually through the purchase of the small spin-off firms.

"Certainly the universities now recognise the need for a liberal view of external consultancy work their staff might be doing. They are very receptive to technology transfer."

Bullock's report says the start-up and takeover process has led to a new breed of entrepreneurs. When their companies are taken over they leave to start new ventures. This has led to a "network" of experienced entrepreneurs who have been able to move on to managing the more risky product firms.

This in turn has attracted more and more venture capital as the entrepreneurs and the backers have got to know each other. This intimate relationship has been "critical" to the growth in the number of successful specialist firms in the US the report says.

Bullock added that a similar network of entrepreneurs and backers was growing up around the Cambridge science park.

But in general setting up a science park was not a proven way of encouraging technology transfer in Bullock's view.

■ Foreign computer companies are willing to pick up products from the UK's universities. See Page 4.

France warned of computer shortage

by Jack Gee

FRENCH industry is so seriously short of computers and robots that it risks failing to attain the government's target of climbing to third place in the world high technology league by 1986, according to a report by the National Economic Planning Commission.

The Commission, which is preparing a series of objectives for France's ninth economic plan (1984-1988), says that with an outlay of only 40 billion francs (£4 billion) annually on information technology, the French lag far behind the US, Japan, West Germany, the Soviet Union and Britain.

The planning experts say that a key problem is the absence of computers in private industry. Only one firm in 10 is equipped.

More than 35% of France's computers are installed by the Ministries of Finance, Defence and Transport and by the state-run social security service.

Following the nationalisation last year of the country's major industrial groups, the government effectively controls half of the 94,000 computers now at work in France.

The French planning commission stresses that computers are breaking less strongly into manufacturing than into trade, distribution and data capture industries with special emphasis on electronic cash registers. Last year French factories spent only Ffr8 billion (£800 million) on automation.

France has only 0.7 robots in operation for every 10,000 workers compared with eight in Sweden, six in Japan, 1.6 in the US and 1.1 in West Germany.

The planning report says the main obstacles to the introduction of computers and robots on a big scale in France are financial and psychological.

The fear is prevalent that computers mean loss of jobs and depreciating of professional qualifications. But the report argues that the computer industry creates manufacturing jobs at one end of the production process and jobs for operators at the other.

The French planners say the "Filiere Electronique" — France's plan to expand its electronics and computer industries to the Japanese level by 1986 — has a job multiplying coefficient of between 0.6 and 0.8 in manufacturing and between 2.5 and three at the level of users.

Drop in inflation rate boosts BT's cash flow

by John Kavanagh

BRITISH Telecom's need for cash has been slashed by falling inflation, the recession and internal cost-cutting. Industry secretary Patrick Jenkin announced last week that instead of borrowing £96 million in the 1983-84 financial year as it had expected BT would pay back £100 million to the government.

This move rounded off a year in which BT's capital spending estimates dropped from £2,380 million to £1,590 million. Most of this has been financed internally but BT was allowed to borrow up to £340 million on the international money markets.

During 1982-83 the spending estimate dropped to £1,934 million and then to £1,590 million. The external financing limit was revised to £310 million but even so BT has fallen far short of this in its borrowing needs.

Last November the 1983-84 external financing limit was set at £96 million but that figure has now been cut by £196 million, leaving BT to pay the Department of Industry £100 million for past investment.

BT said the falling inflation rate had saved it £120 million in the current year in the form of lower wage settlements and contract prices than expected.

The recession had cut the number of new exchange lines from the planned 710,000 to 480,000. And £70 million had been saved through internal cost-cutting and better use of resources.

The Department of Industry stressed that despite the capital spending cuts BT's plans to modernise the public network were going ahead with little change.

■ BT has signed research agreements on underwater optical cable systems with the UK manufacturer STC, said to be the world's leading supplier of submarine systems. BT and STC will share the results of their research.

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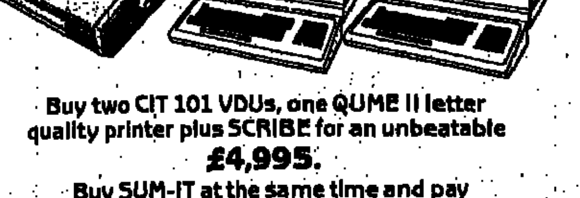

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RANDELL . . . "It's all done by mirrors."

Big names make Unix connection

by George Black

THE INDUSTRY'S big names are lining up to buy software developed at Newcastle University's computing laboratory. And orders have now topped £800,000.

The long-awaited "Newcastle Connection", a system for linking machines using Unix, was launched commercially last week at an international gathering of industry experts. Poised to take it up are Digital Equipment, Logica, Zilog and the French systems group SG2. Behind them in the queue, but eager to take up options are IBM, ICL, Perkin-Elmer and the West German PCS.

The Connection is a subsystem added to a set of standard Unix operating systems, connecting them by a local area network. The new subsystem has no ties with the original invention by Bell Labs, nor is it specific to any particular implementation of Unix, but is applicable to any of the lookalikes.

Professor Brian Randell told the meeting: "Our slogan 'Unixes of the world unite' was not meant as a joke. The style of design is for an essentially infinite system."

The product could get backing from the EEC in May if its Esprit committee decides to act on a report by the Microelectronics Application Research Institute. (MARI). Esprit, the European research and development programme for information technology, is due to decide shortly on a number of pilot projects towards its full scale plans for next year. Main target areas are software, information processing, office automation, CAD/CAM and microelectronics – but committee members are believed to be keen to get information exchange system to underpin these schemes.

MARI's report, flagged "The Cross Border Connection of Distributed Unix Systems", is being urged upon EEC bureaucrats by its parent systems house CAP. Written by Randell and his MARI colleague John Dobson, it argues that the Newcastle Connection should be built on to become the Newcastle-Brussels connection.

EEC officials are as cryptic as ever on the subject, unwilling to be seen to be influenced by external pressures. But the choices of the world's top two computer companies, IBM and DEC are bound to affect the path they will take.

Giving his technical presentation at the seminar in Newcastle, Randell described the Unix United concept as "a distributed system indistinguishable at user and program level from any uniprocessor Unix". It united existing Unix systems instead of installing a new distributed system, he said.

"We wanted to avoid any dependence on central control. It's astonishingly simple and what's most annoying is that it took us so long to think of it. It's all done by mirrors if you see what I mean."

Unix United is now used at Newcastle University on five DEC PDP-11 minis connected by the Cambridge Ring local area network.

Logica, which had a pre-release version of the Newcastle Connection and will market it, and the University of Keele both have similar installations based on PDP-11s and the Cambridge Ring. Illinois University is putting in a version using Berkeley University's 4.1A Unix and the Ethernet LAN. The German PCS is working on a 68000-chip version also connected by Ethernet.

SALES BRIEF

ICL wins £1.4m order from US firm

ICL has won a £1.4 million contract from a US company for a retail stock control package. It signed for the building trade. The order was placed by Evans Products of Portland, Oregon, and includes the Retail Applications System 25 with ICL's Kandi II building materials package.

Evans Products will use the ICL equipment at its 348 US stores for controlling the flow of building materials and home improvement gadgets. ICL was chosen for the contract because no one else offered a retail package in the home improvement market, said Ralph Hakim, Evans vice-president.

In the air

THORN EMI subsidiary Software Sciences has been given a £3 million order by the Civil Aviation Authority for a system to update flight plans at the London Air Traffic Control Centre (LATCC). The contract is the first phase of a new electronic display and update system called EDDUS, and includes six months working out the details followed by a 15 month implementation stage.

$6m for Priam

PRIAM has maintained US dominance of the European disc drive market by announcing a $6 million contract for eight-inch Winchester drives with Philips Data System in West Germany. Included are Priam 3450 and 7050 drives for use in Philips storage subsystems in the P4000 business range of computers.

Terminal case?

TROUBLED State-owned French giant Cii-Honeywell Bull has announced one of the biggest orders so far for its new Questar/F financial terminals from the Credit Agricole bank. The order includes 250 terminals, 53 of which are already installed in 20 of the bank's branches and linked via a minicomputer to the main computer centre in Rouen.

City links

THE CITY of Cardiff has ordered nine M200 multicomputers worth £160,000 from Multicomputer of Brentford. The M200s will be used to process housing waiting lists, house transfers and vacant properties and other applications

Systime booking

SYSTIME of Leeds, in which US giant Control Data recently bought a 35% stake, has sold a £140,000 computer to the British National Library for its Lending Division. The Systime 8780 processor will replace a DEC PDP11 to speed up access to the stock of 4.5 million books and periodicals.

Future floppies

FAST growing Future Technology Systems of Scotland has gone to the US for $1 million worth of 5¼-inch floppy disc drives. The order, placed with Micropolis, includes Model 1115 single-sided drives with both half Mbyte and one Mbyte capacity to be installed in FTS's 16-bit microcomputers including Series 88.

ACT is Victor in distribution race

by Robert Parry

THE two-horse race for mastery of Sirius/Victor 16-bit micro distribution has thrown up a winner. Roger Foster, head of Birmingham-based ACT (Sirius), which has done the bulk of the ground work to establish the Sirius 1 as the UK's top-selling 16-bitter, has come out on top. Rival distributor DRG Business Systems of Weston-super-Mare, which sells the machine as the Victor 9000, becomes a sub-distributor of ACT, effectively moving down a rung.

Foster said: "We never really saw DRG as a threat on this.

"We will be selling the machine in the same physical state as at present, but we will be paying ACT rather than Victor," says DRG's managing director Michael Kilmartin.

"Now every time we buy a machine we strengthen ACT," comments Kilmartin.

The ACT/Sirius/Victor saga has been one of constant jockeying for position. ACT (Sirius) set off in late 1981 as sole UK distributor for the Sirius 1 built by Chuck Peddle's Sirius Systems Technology in the US.

Sirius Systems was part-funded by Kidde, a large US entrepreneurial company, which sold the machine in the US through its subsidiary Victor Business Products as the Victor 9000.

In August last year, Victor moved into the UK through distributor DRG Business Systems, and there were several months of dealers switching allegiance to try and squeeze better deals out of the distributors.

Then Sirius Systems merged with Victor Business Products to form Victor Technologies last November, headed by Chuck Peddle, and set out to refocus Victor marketing.

Victor, ACT and DRG have now rationalised the distribution of the machine in the UK, and DRG has terminated its contractual agreement with Victor Technologies, despite Peddle's pledge last November that Victor would honour such contractual commitments. ACT has just over 400 Sirius dealers; DRG has about 100.

"It was all very amicable on both sides," adds ACT marketing manager James Blackledge of the new ACT/DRG deal. "But it is the end of an irritation for ACT."

There will also be an end of some irritation for end users. Now DRG's dealers will be able to sell ACT's Pulsar 16-bit software alongside their version of the machine it was developed for.

DRG will continue to sell the machine with the Victor 9000 badge and ACT will keep its Sirius label.

FOSTER . . . "We never saw DRG as a threat."

Welsh fund networks factory

by Donald Kennett

A COMPANY set up late last year to specialise in computer networks has attracted a £100,000 investment from the Welsh Development Agency subsidiary Hafren Investment Finance and has moved into an Aberystwyth factory belonging to the agency.

The company, which was to have been called Computer Network Company until Companies House rejected the name, will base its first products on the Cambridge Ring specification, aiming at the military and industrial markets.

Director Dermot Eustace said: "We're not going after the cut-throat office systems market which is covered by the big multinationals. We may make a box for a Ring-to-Ethernet connection because it is probably fair to say that in the office environment, with word processors, Ethernet is better. But the Cambridge Ring has more potential for interconnecting different kinds of computers."

Initially the company is subcontracting its production to a large unnamed manufacturer. But the plan is to start doing its own testing in six months, followed by its own production eight months later. From a start-up with three founders it plans to employ 50 within three years.

It also plans to work closely with other companies. For example, this week it has been sharing a stand at Compec Wales belonging to Computer Practice, a software house based in Porthcawl. "We could involve them in doing the higher level networking software," said Eustace. "We will look at all different kinds of software. We already have access to DEC software. If someone comes to us saying we could do a Prime interface, we would be interested for access to the CAD market. Prime is strong in that."

French make small use of databanks

by Jack Geo

ALTHOUGH France creates about one-tenth of the world's databanks and databases, the country has only 1,500 users and generates a paltry one per cent of global turnover, a French industry report revealed.

The Association of French Databank and Database Producers said that, while the US controlled half the commercial databanks now in operation, most of those in France confined themselves to scientific information and texts. About 80% of French databanks were run by State and publicly managed bodies, the report added.

The Association estimated the size of the world market at $6 billion by 1985 with the US responsible for $4 million of this total.

In an attempt to explain why France is such a small-scale user, in relation to its high production level, A. Durant, vice-president of the French Databank and Database Producers Association, said: "Out of the 1,000 regular users in this country, only 300 can be considered as really serious.

"The discrepancy between the scale of supply and demand is the result of the financial difficulties encountered by users in spite of the low costs charged by French databank producers."

The average cost of charge for access to a French databank is 200 francs. But it cost about 1,300 francs (about £130) for a French firm to consult an American databank to find for instance a US manufacturer of an electric motor of a specific type.

France has about 150 well established databanks of which 70 are accessible to business firms. Some 58% are directly State controlled, compared with 28% in the US and 40% in other European countries.

But most of the French databanks are in essence libraries whereas the Americans have concentrated on commercial information bases accessible to the general public.

The Databank Association points out that many French executives consider it is beneath their dignity to consult a databank and leave this task to their secretaries. The same phenomenon is found in French managers' attitude towards office automation systems.

UK base for world electronic mail service

by Andrew Thomas

THIS week sees the European launch of one of the first international electronic mail services. US firm Mohawk Data Sciences has been running its WINC (Worldwide Integrated Communications) service in the US for seven years for users including Ford Motor Company and Sealand.

The European operation is based at a London computer centre, using DEC hardware, linked to the US base. According to UK managing director Richard Henry, the decision to base the European centre in Britain was simple: "The UK is the only country where the communications industry seems to have a sense of direction. Although the installed hardware isn't the most advanced in the world – yet – it soon will be. It's simply the best place to set up a new communications operation.

"And it means that British Telecom is taking business from the European PTTs," he added.

WINC is available on 90 day contract terms and is based on the central computer dialling subscribers at pre-determined intervals, 24 hours a day. Existing customers are polled at intervals varying from 15 minutes to two hours.

An MDS Series 21 computer installed at the subscriber's premises sends collected messages to the central machine, and accepts incoming data from the network. Foreground tasks on the Series 21, such as word processing, can continue uninterrupted during the time the terminal is talking to the host.

In the US, users have installations of Series 21s ranging from single machines for small users, to over 300 for users such as Ford. Charging is either by traffic volume or, for users with high usage, a fixed price based on the actual cost of the communications circuits.

HENRY . . . UK is best.

'UK robots can lead world'

by Andrew Thomas

THE UK has the opportunity to build a world lead in the second generation of industrial robots, claims the vice president of the British Robot Association.

John Collins, director of manufacturing technology at TI Domestic Appliances, claims that the market for the more flexible and intelligent second generation machines will be many times larger than the 30,000 robots currently installed throughout the world.

"The first generation were simply solutions looking for problems," says Collins. "They were designed to work in hot, dusty conditions, so people looked for hot, dusty conditions to put them in.

"The second generation will be installed as strategic replacements of existing manufacturing systems, and this means two significant things for British industry – first the robots will be introduced faster than they have been up to now, and second, it gives us the opportunity to get in there and make the things."

And one company which has done just that is British Robotic Systems, a BTG offshoot which plans to almost double its workforce in the coming year.

Managing director Brian Atkinson says that the company is concentrating on the application of intelligent sensors such as vision to enhance manufacturing processes by emulating many of the features of the human eye.

"Our approach enables the linking of several items of conventional plant under one intelligent controller," says Atkinson. "You could have two conveyors, a robot, a machine tool and an ink jet printer, all controlled by one of our vision sensors."

The BTG currently has £405,000 invested in BRSL, and Atkinson says there will soon be more on the way. One of the principal projects currently in hand is the development of a linear array processor which will enable a 512K pixel linear image to be pipelined directly into the processor for even faster image recognition.

■ Japanese robot producers are running into problems – p20.

Ice for Scandinavia

by Andrew Thomas

ASHFORD-based Ice has scored another export victory, bringing its total for the year to nearly £6,000,000. A deal with Scandinavian systems supplier Scantele will bring in over £750,000 to the company and involves the supply of its disc and tape streaming products.

Ice sales director Andy Robson reiterated the need for money to help Ice maintain its growth.

"Our original business plan for 1983 was for a turnover of around £5 million," says Robson, "but we've had to re-think our ideas, and the new plan sets a target of £8-£10 million. We can't do that without the cash, and its difficult to find anyone willing to talk to us. The business is there, and we have the potential to get it."

Ice was set up in 1980 by ex-IBM engineer Michael Chandler.

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AIR CANADA

Rovsing pips US giants to Air Canada network deal

by Donald Kennett

DANISH minicomputer manufacturer Christian Rovsing has beaten North American industry leaders to a £10 million contract for one of the world's largest networks.

The contract is for network management, front-end processing and switching equipment to support Air Canada's worldwide network of 15,000 terminals from processing sites in Montreal, Toronto and Winnipeg. It also covers software development for network modelling, costing, billing, electronic mail and message switching systems to operate under distributed control.

An important factor in Rovsing's victory was its ability to preserve the airline's investment in existing optimised and customised systems while enabling it to expand with systems which conform to emerging international networking standards.

Air Canada's data network manager Ken Taylor said the airline was looking 25 years into the future in installing the equipment. The new network would support services and take advantage of communications opportunities that the current one could not, involving new types of terminals and access security methods, as well as making savings by changing the network topology and using public data networks.

Increases in "functionality", numbers of terminals and traffic capacity would be effected in an evolutionary way without disruption, he said.

The current network is centred on a single installation in Toronto which runs applications on nine Sperry Univac 1110s, a Honeywell DPS-8/70 and an IBM 4341. Based on Rockwell-Collins C8562 communications processors that are no longer made, it is operating at near peak capacity with 8,000 terminals and 3,000 printers. The new network will be based on Rovsing's CR80 minicomputer.

NEC moves into the high street

by Robert Parry

NEC, Japan's top-selling micro maker, is moving into the British high street to join IBM and Apple.

Department store chain John Lewis has been signed up to sell NEC's PC-8000, with associated peripherals and software from NEC, predominantly as systems for small businesses rather than as home computers.

"John Lewis is our first department store outlet," says NEC sales manager Mike Flashman, "but we are looking for others. They will be a whole new set of outlets to add to our 50 or so other dealers."

Flashman indicates that another department store will be signed up within the month.

So far only two stores in the John Lewis chain – in London's Oxford Street and in Milton Keynes – are to take the PC-8000, but this is soon to be increased.

"John Lewis is very impressive, very professional," says Flashman. "It is a true computer dealer, meeting all the standards we ask of our outlets."

The PC-8000 joins other micros, including machines from Sharp, Sinclair, Atari and – when there are stocks – Commodore, on John Lewis' shelves. Flashman is confident of its ability to stand up to the competition.

"There are many, many different shades of machine wanted out there, and there will be a lot of equipment coming from NEC to appeal to the different sectors." He adds that NEC has been very active lately and is gaining ground rapidly, claiming a twentyfold increase in business over the past six months.

"I've got all the products and the market is there. I've just got to make sure that we don't do anything stupid and run out of people to support our machines properly. There is no reason why that factor of 20 in the level of business should not reach 40 or 50 by the end of the year."

Micros are no strangers to high street shops these days. Home computers, like the Sinclair ZX81 and Spectrum, the Commodore Vic-20, Texas Instruments' TI 99/4A and the Ataris, are relatively easy to find.

Machines for business users are less often come across through such outlets, though some, like Currys, have stores dedicated to micros and software.

IBM ex-managers on trade secrets charges

by Howard Karten

IBM last week charged a San Jose, California firm with misappropriation of trade secrets and other confidential information in a case involving manufacturing processes of thin-film disc heads.

In a suit filed in the US District Court in San Francisco, IBM charged that the five founders of Cybernex Corp – all former IBM engineering or manufacturing managers – and the venture capital firms backing Cybernex wrongfully used technology which IBM had spent some $200 million and 14 years developing.

IBM has asked for injunctive relief, and that Cybernex be enjoined from using or disclosing any trade secrets or proprietary information. The suit is the most recent evidence of IBM's vigour in prosecuting employees who are alleged to have wrongfully damaged the company.

The five employees all left IBM around September 1981. All had been involved in the design or manufacture of the thin-film read/write heads used in IBM's 3370 and 3380 disc drives.

IBM said that the manufacture of the heads involved more than 100 separate steps, and that the Cybernex head was virtually identical to IBM's.

The amount of damages in the suit remains to be determined, and will be set as a result of information learned in the pre-trial discovery process.

Press leak 'puts advice centre in peril'

by Philip Hunter

A COMPUTER advice centre planned by Manchester Business School has been put in jeopardy by advance Press leaks. The plan is to attract private sponsors for a technology centre to provide companies with advice on computers and office equipment.

Professor Enid Mumford, one of the academics from the Business School leading the project, said a number of private companies had offered sponsorship, and there was also a chance of aid from the Department of Industry.

But Professor Andrew McCosh, the Business School's specialist in management accounting, said an advance leak to a leading UK financial newspaper had put the whole venture in jeopardy.

"It is a little early to talk about it," he said this week. "There was still an excellent chance of it happening until it got into the Press."

McCosh said the fate of the venture will be decided at a meeting on April 26.

Professor Mumford said that the scheme, called the Manchester Business Technology Centre, would try to relate specific business problems with the equipment best suited to deal with them.

"We'll be looking at things from the business angle and making sure that each company that comes to us is clear about what are its real business problems before dealing with the kind of hardware or software it needs," Mumford says.

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Star moves into UK at high speed

by John Kavanagh

THE high-speed processor market has been joined by a new US firm backed by $14 million of external funding, plus research facilities and a $10 million order from mainframe manufacturer Control Data, which makes the top-end Cyber machines.

Star Technologies was set up by former senior staff of the array processor specialist Floating Point Systems. The company is now starting operations in the UK, France and Germany.

Star's ST-100 processor is aimed initially at users of 32-bit minicomputers from Digital Equipment, Perkin-Elmer and SEL, plus IBM 308X customers. A Star processor with 512 32-bit words costs $250,000. The UK price is £200,000.

A DEC Vax-11/780 with an ST-100 provides 90% of the speed of a Cray supercomputer at a twentieth of the price, says the company.

"Our machine is twice as much as Floating Point Systems' in price but eight or 10 times better in speed," said Gavin Roriston, head of the UK operation.

"FPS has done an excellent job in building up the market and will continue to grow among low-end users. We are aiming at sophisticated users who have been conditioned by FPS. But our machine uses emitter-coupled logic technology while theirs has old Schottky technology."

But Stephen Markham, Floating Point Systems' manager for Northern Europe, said his company's products were more powerful than Star's. "We have gone up to 64-bit processors so we are very much as the top end," he said.

"We have a full Fortran compiler and complete applications packages for jobs such as finite element and structural analysis, integrated simulation and oil reservoir simulation. We have several new product projects in hand.

"Users are not as interested in technology as in reliability, flexibility and support. We have 30 people in the UK and 70 overall in Europe."

Floating Point Systems has 250 UK installations. Its products range in price from £20,000 to £500,000.

Star was formed by Ion Salquist, formerly head of international marketing at Floating Point Systems. He was joined by one of the company's sales engineers, Bob Hausman, and former European manager Lajos Bornemisza.

RORISTON . . . Aiming at sophisticated users.

Cork factory aim is £145m exports

NORTH STAR Computers Ltd said it will export more than £145 million worth of computers from a new plant it is setting up in Cork in the Irish Republic.

The total investment will be £9 million and the company says its exports will be achieved over the next four years.

North Star is getting grants assistance from the Irish Industrial Development Authority, to which it has promised nearly 300 jobs at full production.

First dividend

A FIRST time dividend of 3p per 10p ordinary share is announced by Consultants (Computer and Financial) following a profit for 1982 of £124,919, a 2% increase on the previous year. Turnover for the year was £11 million against a 1981 figure of £716,835.

Travel links

PORTUGAL Holidays has signed a £125,000 contract with Baric Computing Services to run the first flight and hotel booking system on a Baric Gateway viewdata service. This will put the tour company in contact with more than half of the country's 5,000 travel agents who are linked to Prestel sets.

CAD/CAM show

A NEW automation exhibition is to be staged at Birmingham's National Exhibition Centre from May 1-3 next year. The Electronic Production Efficiency Exposition, EPEE, is to be organised by Network Events, which is issuing 40,000 organisations to participate. It is mainly aimed at the booming CAD/CAM market.

Leeds opens a women-only micro centre

by John Riley

LEEDS has opened the largest women-only micro training centre in the UK with creche facilities. It is the second women-only training centre.

About 60 women will attend two basic year-long courses in computing and microelectronics each year and a further 120 are expected to join eight advanced courses lasting six weeks. The eight lecturers appointed so far are all women.

The courses will teach programming languages, circuit building, and electronic equipment testing, and on the basic courses the women will work in local companies for two months.

Leeds City Council is paying £453,000 towards the scheme, and a European Community source, the European Social Fund, is contributing £226,000 for the first full year.

The courses are to be held in the re-opened Sweet Street Skills Centre, which was a training centre for heavy engineering before it was closed in 1979. The Centre will also accommodate a series of mixed six-week training courses for field service engineers and a new Department of Industry-funded Information Technology Centre (ITEC).

"Sweet Street is very run down, being in the heart of the original industrial base for Leeds," said Councillor John Battle of Leeds City Council. "The traditional industries, manufacturing and clothing, were geared to women, so unemployment among women is high.

"We now want to train women for the computer world."

The Department of the Environment contributed £175,000 towards the capital cost of the Centre as part of its Inner City Development Programme. The ITEC has been held up while the manpower Services Commission and the Department of Industry decide on its precise funding.

The hold-up is that ITEC centres usually accommodate about 30 teenage trainees, whereas Leeds City Council wants to cater for up to 80. The Council is confident that it will receive about £110,000 from the DoI by the summer.

■ Information Technology Minister Kenneth Baker opened the 38th ITEC in Lincoln last week. It is, like the others, to teach teenagers awareness and experience in new technology skills, and local firm Marconi Electronic Devices is helping with the scheme. Some 150 centres are planned by the end of this year and 91 have been approved so far.

Baker claimed that job prospects for centre graduates are high. He said: "Already 130 trainees have found jobs before even finishing their 12 month courses."

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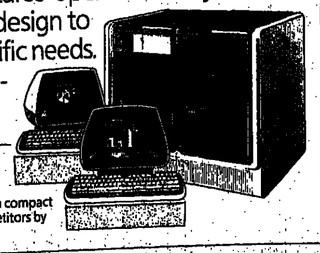

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Data General

Hannan Rose reports on the slow progress of the Data Protection Bill

The art of minimal legislation

ELTON . . . Computer speed poses greatest threat to privacy.

THE Data Protection Bill will complete its passage through the House of Lords with the Third Reading scheduled for today (Thursday, March 24). It will go to the Commons after Easter, and the process of Second Reading debate, Committee Stage, Report and Third Reading will be repeated. Whether the Bill reaches the statute book is now a minor matter in wider political considerations.

Clearly, data protection is a matter appropriate for a government's last session when it is looking for issues that will not arouse great passions in the run-up to a General Election. Indeed, it seems that the government is not so much concerned with protecting the interests of the "data user" or even the "data subject", but with what will be sufficient to meet the convention of the Council of Europe.

That the Bill has been produced at all seems to be due primarily, if not wholly, to the Department of Industry – or certain sections of it – becoming aware of the dangers to Britain's commercial interests of the Convention being ratified while we had no legislation at all. This would have prevented information and, hence, business being sent to Britain from countries with data protection laws and especially those which had ratified the Convention. This concern was communicated to the Department responsible for the Bill, the Home Office.

This background highlights a problem for the computing industry and those in it. While working away on technology and business, little appears to have been done to develop computing's relations with the public and the decision-makers.

When drawing up last year's White Paper for subsequent discussions, the Home Office brought together its own informal group to consider technical issues, and it is now somewhat late in the day for the National Computer Users Forum to raise basic points about the Bill. In particular, during the three days of Committee discussion in the House of Lords there were a few references to the views of the British Computer Society, but there was no other mention of the views of the computing industry or any bodies representative of it.

Needless to say, the professional machines of the British Medical Association and the Law Society had made representations so that their points were raised. Also, and rather confusingly, Lord Mottistone, a Conservative backbench peer, tabled a veritable stream of amendments for two bodies with somewhat different concerns and interests – the Confederation of British Industry and the National Consumer Council.

These generally betrayed a lack of sophisticated understanding of the technology of computing – which only served to highlight further the lack of involvement of those who might have been expected to be close to the issue.

While neither the ministers nor the civil servants could be fairly accused of lack of intelligence in pursuing the policy line adopted by the government, it would equally be unfair to expect them to have the expertise to be the voice of those intimately involved with the technology.

It fell to the opposition front bench to raise most of the major issues and they did so generally on briefs provided by Paul Sieghart, a barrister and the chairman of the Executive Committee of Justice, who was a member of the Lindop Committee. These, therefore, were thoroughly prepared. This only serves to highlight both the odd way in which the British political process works and the strange unpreparedness of the computing industry to deal with this Bill.

First, the issue of privacy and data protection has been a long time gestating. Younger and Lindop and the White Paper – with many years in between – are followed by the political decision that the Bill is "on" and will be in this session's programme. Then, everything has to be done in double-quick time, with parliamentarians rushing through clauses, able to do little more than propound their prepared positions.

Further, given the gross inequality of resources between the government and the opposition – let alone the individual backbencher or independent member – it is almost inevitable that any successful changes will have to be adopted and drafted by the government which has the staff and the skilled draftsmen to do the work.

This puts an even greater burden on the civil servants trying to keep up with the points thrown at them from every direction with no respite from one debate, or even one stage, to the next.

As the Bill moves towards the Commons, many issues still remain. Even with the narrower group of ministers who can sign national security exemptional certificates, is it satisfactory that there is no scrutiny or review of this area at all?

And is the government's adamant refusal to consider exemptions in other areas such as personnel and examinations records going to put back the use of computing because manual records will not be covered by parallel legislation?

In terms of its own self-interest, has the computing industry ensured that the needs of "users" are properly safeguarded? And, if the industry wants to create public confidence in computing, is it sure that the safeguards and rights given to the "data subject" are adequate?

Most fundamentally, there is still – just about – time for the technologically expert to look at the Bill and to see whether it makes sense and will be workable. For example, are the definitions of such simple terms as "data", "equipment" and "material" acceptable, and do the Registrar and the Tribunal have the right powers to do their work?

This should be done before the words become cast in stone as an Act of Parliament – and there can be little doubt that, once this Bill has reached the Statute Book, there will be little political will to embark upon further legislation in this field unless the "Data Protection Act, 1983" turns out to have been woefully and very basically defective.

Given the headlong rush that is on now that a Bill is in the Parliamentary machine, the brief Easter recess and the shuffle from the Lords to Commons gives all concerned just a few days to assess the situation – and prepare for renewed debate.

Bill leaves the 'dirt book' option open

by our Parliamentary Correspondent

IN the House of Lords the debate on the second reading of the Data Protection Bill continued.

Lord Elton, Home Office Under Secretary, has resisted an attempt to write into the Bill a provision obliging employers to open up their "dirt books" for inspection when there is a cross reference to the existence of such records in the computer-stored information.

Viscount Bledisloe envisaged a situation in which a data user had a large computerised file of personal data on all his employees, most of it "routine stuff and very proper." But he might also have, or wish to gather, more controversial information, perhaps based on hearsay or scandalous gossip, on a relatively small group of employees, and store this manually in a "dirt book".

Lord Elton argued that it was the speed and ease with which computers could process and link information about individuals which posed the greatest potential threat to privacy.

Lord Glenarthur, another government spokesman in the Lords, has moved a report stage amendment to Clause 4 of the Bill which will mean that data users will be restricted to a single access point in dealing with an application to reveal information contained on a computer.

Lord Elton has bowed to mounting pressure in committee and introduced an amendment which would set out three years as the minimum period for registration by a data user without having to renew his registration.

Yet another government amendment will place the responsibility for issuing warrants to enter premises to seek evidence of a breach of the data protection principles and a suspected criminal offence on to circuit judges rather than magistrates.

The Lord Chancellor has responded to a request that information supplied to data subjects should be in plain English.

He moved an amendment to Clause 21 of the Bill to require a data user to provide an explanation where the information he supplied was not intelligible.

HOWE . . . "Innovation package" for industry.

'Industries of future' get government gravy

Kevin Cahill analyses how the Budget will affect the computer industry

CHANCELLOR Sir Geoffrey Howe renewed last year's theme of an "innovation package" for industry with a Budget pledge of £185 million in new support from the Department of Industry.

In 1982 Howe's three-year innovation package amounted to £130 million. This year's support programme, outlined by Industry Secretary Patrick Jenkin the day after the Budget speech, provides a further boost up to 1985/6.

More money has been allocated for an innovation-linked investment scheme, the software products scheme, CAD/CAM, advisory services, telecommunications, and small engineering firms.

Jenkin emphasised the shift away from "lame duck" heavy engineering industries "towards the industries and products of the future". At the same time he added that a final decision had not yet been made on the proposed five-year £350 million programme for advanced information technology proposed by the Alvey committee.

£40 million is to be added over three years to the DoI's Support for Innovation Programme. The money will be used in an innovation-linked investment scheme to help "pull through new products and processes to the market when development work has already been supported by the Department, or such work should have been eligible for support."

Over 84 different DoI schemes aimed at assisting small and medium companies to get new processes and products into the marketplace were pulled together last year under the Support for Innovation scheme. Microelectronics, robotics, CAD/CAM, and biotechnology are particular areas of emphasis, with grants of up to 33⅓% towards eligible project costs the normal form of support.

Jenkin said that existing resources would be used to maintain assistance at 33⅓% for a further year beyond May 1983.

The DoI has formally stated its willingness to buy pre-production models of new or significantly improved equipment for trial with users. Although software is not specified, Department officials said that software products would receive the same consideration as ordinary manufactured products.

This would enable a small software house with a new or advanced form of say, Visicalc, or a small CAD system, to get financial support at the critical point between first introduction and the first commercial sale by having the DoI "buy" the product.

Support for Innovation also includes awareness projects, such as advertising, conferences, and campaigns where the benefit to the industry is indirect, rather than direct cash grants.

The DoI outlined some of the expenditure in schemes that have been underway for some years: From its start in 1978 to the end of 1982, £53 million has been committed under the Microelectronics Application Project, the training and awareness programme. Included were 1,910 research and development projects and 3,566 MAPCON consultancies.

The Fibre Optics Programme, launched in 1981, has committed £28 million in support of 65 applications. And the Robotics Support Programme has spent £8 million installing over 100 robots and in support of 20 manufacturing projects.

With the additional £40 million for innovation-linked investment, the DoI hopes to help in the exploration and definition of market opportunities.

The Software Product Scheme will get a further £15 million over the next three years. Between 1978 and 1982 some £5 million was advanced towards the cost of developing new software products. As a result of a successful lobbying operation by the Computing Services Association, industry figures, and DoI personnel, the government was persuaded last year to allocate a further £10 million, which is expected to be committed by the end of July.

With the additional money announced in the Budget the DoI has signalled its intention to maintain the scheme.

MacGREGOR . . . Extra £300m.

The Computer Aided Design and Manufacturing Awareness Programme is extended under a slightly changed orientation. Another £10 million is added to the existing £6 million three-year allocation that was released in October 1981.

The orientation this year is to be towards CAPM (Computer Aided Production Management).

According to the DoI the use of computers to manage and control production can save up to 20% on work in progress and inventory. This would seem to be a return to one of the oldest and most frequently attempted software application packages after payroll.

Many software houses and consultancies began their businesses in this area, and the scheme should enable a few golden oldies to be rolled out again.

Advisory services, including the Manufacturing Advisory Service and the Design Advisory Scheme, are to get an additional £20 million. And the DoI is undertaking discussions on a marketing consultancy service.

Of the £185 million Howe promised, £100 million is targeted towards small engineering companies to encourage greater investment in advanced capital equipment.

The money could benefit the computer industry in two ways.

Computer industry products such as computer-aided engineering and design equipment, production-related microprocessors and data input devices are classified as advanced capital equipment; and secondly a number of small computer industry companies, particularly manufacturers, can be classified as small engineering firms, the DoI says.

A similar scheme last year, which had £30 million allocated to it, closed after only eight weeks because of the flood of applications for money. The demand for this year's programme, called SBFIS2, is likely to be just as high, and early application is advised.

With most of the computer industry concluding that communications is going to be the growth area of the next decade, the DoI has decided to allocate £5 million to help with the development of telecommunications product schemes. The money will come from existing resources.

The minimum cost of entering a product for validation is £2,000 with an average estimate of £30,000 to get a telephone-type device approved.

This is almost certain to exclude from the liberalised telecommunications environment the small companies the government is trying to encourage with its £5 million.

In the US, by contrast, the cost of full approval, including a consultants fee is about $800 to $1,500.

Patrick Jenkin conceded that the situation at the BABT was unsatisfactory and implied that some action would be taken to reduce costs and speed up the frequently year-long process of getting equipment approved.

In a separate announcement by Industry Under Secretary John MacGregor, the government said it is providing support for an additional £300 million in bank lending under the Loan Guarantee Scheme.

The Loan Guarantee Scheme enables banks to lend money to people and companies without assets to guarantee loans.

The government guarantees up to 80% of the money advanced by the banks, and so far the government reckons to have lost about £2 million on the scheme. The loss is small compared with the sums of money advanced and the number of jobs created by companies taking up the scheme.

According to estimates from the banks, something like 40,000 jobs have been created by the companies they have lent money to, and the £8 million is a somewhat confused and conservative estimate of losses to date.

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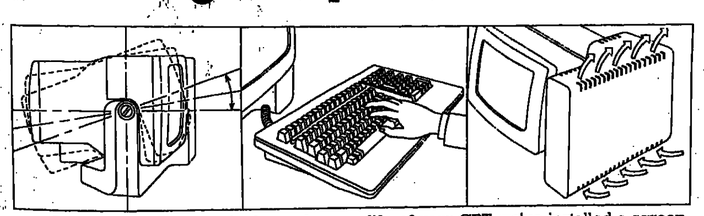

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CAP sets lead with Asian deal

BRITISH software house CAP is going into partnership with Sime Darby, an industrial corporation in South-East Asia.

CAP group chairman Barney Gibbens said: "It's probably the first joint venture between a bespoke software company from this country with a conglomerate in that region."

Sime Darby, with vast trading interests encompassing commodities and cars, has had a tough year with falling prices and rising costs hitting traditional products hard. But like other multinationals it has responded by diversifying into high technology.

With CAP it has set up Sime-CAP which is formally launched in Singapore on March 30. Ex-Scicon head Brian Elson who is managing director of Sime's systems subsidiary SDS, now becomes a chairman of Sime-CAP.

"Our attitude is that the company should become indigenous as soon as possible," said Gibbens. "We're swallowing our pride and letting someone local run the show. That is the only way it can be done successfully."

Singapore's Prime Minister is dedicated to building its own native software industry, he added. But by the time that was under way Sime-CAP could have spread itself across Malaysia, Thailand, Indonesia and the Philippines. And they will be keeping an eye on Hong Kong and China. Sime-Darby's headquarters in Malaysia will be crucial in this context.

SDS has already built up a useful presence in the area, representing Apple and Tektronix and running an IBM System 38 and Prime bureau. But Brian Elson said the only route to long-term viability for them was through consultancy and professional services.

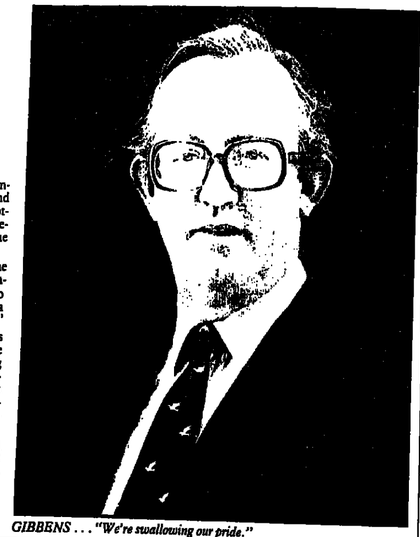
"Singapore is the most government-directed economy in the free world and it's massively booming," he said. "It's the second largest port in the world after Rotterdam, the second largest oil refinery and fourth or fifth in the financial league.

"The British still regard it as the backwoods, but those British companies which have bothered to go out there have done well. It's a modern, pleasant, efficient place."

Sime-CAP will have new offices in the purpose-built Sime Centre by the end of the year. Managing director will be CAP's John Wilson, whose staff will grow to about 50 in the first three years. Recruitment is to be mainly from Singapore nationals.

Elson said there would be a pool of local skills by the end of 1984 because the government was pouring money into computer resources and training.

SDS' current 96 employees will all be committed to the venture.



GIBBENS . . . "We're swallowing our pride."

Help on the way for 16-bit singles

by Robert Parry and George Black

IS THERE light at the end of the tunnel for 16-bit single users who have no way of expanding to multi-user systems?

Microsoft now seems to be moving steadily towards solution of the problem of linking its single-user micro operating system MS-DOS to its more sophisticated Unix lookalike, Xenix.

Microsoft has never made any secret that achieving compatibility between the two would be a struggle. But an uprated version of MS-DOS (MS-DOS2) is in the final stages of implementation by many micro builders and the link between MS-DOS and Xenix is now being promised for a date later on this year.

Already IBM has announced version 2 of its Personal Computer operating system PC-DOS, an implementation of MS-DOS, and a flurry of similar announcements from other manufacturers offering MS-DOS on their machines is imminent.

Next month ACT will have pilot sites for its first networked Sirius systems, which centre around MS-DOS 2, and it expects to have single station MS-DOS systems before IBM's June 8 introduction date. Wang is also close to putting MS-DOS 2 on to its personal computer.

Meanwhile Microsoft is beavering away on further MS-DOS upgrades, upwards compatible with earlier versions all the time. Each new version will have extra features over its predecessors and can be considered a separate operating system, becoming more and more compatible with Xenix.

David Fraser, Microsoft's new UK general manager, says the missing link between MS-DOS and Xenix will come late this year and will continue the unbroken upwards migration path.

Microsoft's aim is that users will be able to take applications from single-user MS-DOS systems on to multi-user Xenix systems without having to change the software. MS-DOS is well up in the single-user 16-bit micro operating system stakes, while Unix in its various guises is showing well as the favoured operating system for high powered multi-user microcomputers.

Already MS-DOS 2 adds some Xenix-compatible system utilities, so that applications developed using the right sub-set of Xenix commands can be run under MS-DOS 2. Similarly, if programs are written under MS-DOS 2 using only these Xenix-compatible system calls, they can be run on a Xenix machine.

FRASER . . . Unbroken path.

The other main object in bringing the two closer together is for networked systems, transferring files back and forth between a master running Xenix and slave MS-DOS systems. Slow speed networking of this type will be the rule for this year: high speed networks transferring high volumes of data are waiting suitable chips and international standards.

Gaps in the smooth transfer between the two operating systems lie in the user interfaces. These are presently very different, but Microsoft is developing shells to hide the operating system cores and make the two appear the same to users. Ideally the user should not have to care what operating system is running the particular application.

The additions MS-DOS 2 brings include Unix-like ways of doing things.

More 'casualties' in Altergo revolution

THE REVOLUTION at software house Altergo is rumbling on. Now the Northern operation has had a shake-up, with the announcement that two of its Manchester office managers, Mike Carswell and Terry Sheridan, are leaving.

A new UK and international sales director, Peter Sedgwick from IBM, has been taken on. He will work alongside another recent addition to the board, David Joice, who is responsible for marketing. The re-shuffle is part of a move towards more emphasis on selling introduced by American financier Len Levy who became the company's managing director last year.

Levy's new-broom approach has brought major changes to the look of the firm in the last few weeks. Director Frank Park commented: "In any restructuring there are bound to be one or two casualties, but it has all been quite amicable."

Carswell had nothing to say on the subject, but one source said he and Sheridan intended to go into the computer services business together.

The organisation has been reshaped by Levy, with Altergo Ltd, Altergo Business Systems and Altergo Software being taken in under one umbrella, Altergo Information Systems. Park said this was a deliberate copy of the IBM reconstruction carried out in this country last year.

Mike Crisp, formerly regional sales managing, has been promoted to marketing manager to replace Elizabeth Skerrett-Smith.

Last month five Altergo managers quit to set up their own operation, Bluebird Software, declaring they did not want to work under Levy's direction.

They included Brian Walker and Barry Whitesman, who with Richard Levy (no relation) helped to found Altergo Business Systems.

Toolbox goes to US

A PACKAGE developed on the Scottish island of Mull is now implemented on the IBM Personal Computer and about to be promoted through American distributors.

Retired programming consultant Michael Turner is the author of Toolbox, a collection of utilities first prepared for the Sirius micro. Turner, who set himself up as a one-man cottage industry under the name of Island Software, was picked up by Export Software International, an Edinburgh venture recently set up by ex-ICL manager Sandy Blackie.

"We take on other people's products, test them, repackage and document them and sell them abroad," said Blackie. "We knew there are holes for particular products in the US market and it is quicker for us to do it this way than to start from scratch."

Toolbox, launched in San Francisco in January, is in a good position to take advantage of the US market, having been adapted to the IBM PC to run under both the native operating system PC-DOS and Digital Research's CP/M-86.

It is a productivity aid to allow 8-bit software to be converted for use on 16-bit machines and consists of five modules.

It's Hoskyns vs Cara

HOSKYNS has redesigned its hotel computer system from scratch to compete with Cara Consulting's new Rooms package, as well as Cara's established Datahost.

Hoskyns was at the forefront of the hotel systems race in 1978 with its Coral language programs, running on Intel 8080-chip hardware and using floppy discs. It pioneered its own multi-user micro operating system and set up a factory in Staines to produce the machinery.

But Mark 1 was overtaken by technological change and the system proved impossible to promote overseas because of lack of technical support.

Now Hoskyns has gone back to first principles and rewritten the system in Mumps, an Ansi standard language. It has been developed for the complete range of DEC equipment from the Professional micro up to the Vax.

In the past Hoskyns' systems have been aimed at hotels in the 75 to 300 bed range, while Cara's Datahost has been aiming at bigger establishments.

Software File is compiled by George Black

APL experts help sought on standards

BRITISH Standards Institution this week called on UK APL experts for help in its submissions for an international standard for the programming language. Software experts chosen will help the UK standards organisation's contribution to the International Standards Organisation through informal talks held in the UK and overseas four times a year.

A previous appeal for help in text processing standards failed and the BSI is withdrawing from that project.

Hong Kong office

DERBY software house Even, which turned over £750,000 in its first year of trading, is to set up an office in Hong Kong. The aim is to promote its Laura solicitors' accounts system and the advertising agency package Ada. Managing director Stephen Haseldine said Even would use the new office as a springboard for Singapore and other South-east Asian countries. Even Computers, which grew out of Even management consultancy business in the late 1970s, sells IBM-based production control systems and is a DEC and ITT OEM.

Coral for DG

A CORAL 66 compiler is to be launched by Data General this month. It has been developed in collaboration with Alberox Engineers (AEL), of Basingstoke and Defence Ministry approval is currently being sought. DG's applications marketing manager Tony Holroyde said they did not expect Ada to supersede Coral for three or four years.

Ada joins Army

SOFTECH of California has won a contract worth more than £500,000 to introduce the Ada language to the US Army. The job involves developing training materials for the Army's communications and electronics command CECOM over the next 18 months. The deal confirms the government's intention to rely heavily on the controversial language for its defence programme.

Handicap help

THE first installation of Tabs' golf package is at the Royal Blackheath Club in South London. The system calculates handicaps, processes competition results and compiles membership lists. Now the Andover software house is sending out a mailshot to all the country's courses and is holding talks with several.

Linc to profits

BURROUGHS' Linc software generator, launched last June, has netted £3 million through 17 British orders. Eleven have now been placed in this country for the Business Partner — Linc plus Burroughs hardware. Eight sites have gone live, including two building societies and a local authority. Other customers include the Post Office, Habitat, Gonzales Byas, Atlantic Containers, John Menzies and Rowntree Mackintosh.

Zilog accounting

ZILOG System 8000 micro users now have a range of financial software packages available to them, written by Shortlands Computing Services of London. The 10 module system is known as the Shortlands accounting and financial management information system.

CAD packages

IBM UK is to market two CAD packages from independent suppliers. The first, a mechanical design package, comes from Structural Dynamics Research. The other is an entry-level CAD system developed by Cadanz Ltd.

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'Obsolete' tools not up to the latest computers

The president of Cincom attacks a failure to invest in software products

SOFTWARE tools are obsolete in design and obsolete in technology. That is the problem in most installations, and as a result users are having increasing difficulty in coping with the demands being made on them by modern computer systems.

Tom Nies, president of Cincom, cites the problem as one of the most important issues of the Eighties. And it is an issue, he claims, which is not being faced up to by many of the major industry suppliers.

Cincom reckons to be the largest independent supplier of systems software, with revenues last year of some $70 million. It took the decision six years ago to address the long term, and Nies now says the company is bringing on software products which will leave it alone among its competitors.

The Eighties, Nies says, will be the decade of application development technology. The Seventies was the decade of the database.

But the problem facing most users is that major software companies have been unwilling to take the risk of investing in the future so that new development tools will be available. Their concern, Nies says, is quarter-to-quarter profit and loss, not customers' needs.

BOOTH . . . Company has to take missionary posture.

The lag of software behind hardware is enormous, Nies says. A random sample of 15 software products currently in use shows that most of them were developed in the late 1960s, before the first IBM 370 was built. The people who developed the products are linked in their thinking to the 360 era, and many of them cut their teeth on the IBM 1401.

Nies rattled off a series of dates when software was built: Cobol, 1959; IBM's PL/1 in 1964-65, CICS in 1966, IMS in 1965, and IDMS in 1962/63 (originally for GE equipment, converted to IBM in 1970). Cincom's own Total in 1969-70; and Adabas in 1967-68.

While Nies would have it that Total is the best of first generation database technology, he does not fail to point out that it is first generation. Cincom is building a new database system to replace Total, while being upward compatible with it, that will be released later this year.

At the same time its "new technology" software, like the TIS Total Information System and the Mantis application development system, are taking an increasing proportion of Cincom's new business.

TIS will take some 20% of the company's new business this year, Nies estimates, while Mantis will take between 25 and 30%.

Nies says that very few software companies are willing to take risks in research and development. The pressure is on them to generate revenue now. And, he adds, there is no pressure from IBM to develop advanced products. IBM lags badly in software products, while what it does produce is not of very good quality, he says.

All of which makes for a scandal in the software industry, and explains the commitment to the short versus the long term, Nies warns.

While the Seventies may have been the database decade, sales of new database systems into IBM sites is now flat, and may actually start declining, Nies predicts. The large penetration in database sales has already been made; customers are loath to convert to a new database unless it offers a substantial upgrade in the system.

Cincom, which built its reputation on databases, and claims 13 consecutive years of growth in the sale of Total databases, may even see a decline in its own database sales this year. But Nies says its next generation of products will ensure the company's continued growth.

In contrast, he points to companies like Cullinane and Management Science America which he says are searching desperately for new markets. Not surprisingly, he says, they are looking at application packages, and rather than building new ones, which takes three to four years, they are going out and buying them in (for example MSA with Peachtree and Cullinane with Computer Pictures).

By buying packages in they achieve the "short term" objective of increasing revenue. They do not, says Nies, meet the needs of the market for more advanced software tools.

With the current trend of larger software companies buying up smaller companies expected to continue, there will eventually be only eight or nine big firms dominating the software industry. But they will not, Nies predicts, have advanced technology products. And the danger is that they will be gobbled up by IBM, which will eventually "get its software act together," or Japan, which is investing a great deal in software technology.

So what is Cincom doing to ensure its independence and success? For one it is spending 20 to 22% of its turnover on R&D, four to five times the industry average, Nies says. Of its 850 worldwide workforce, 28% are full-time R&D, Cincom has seven R&D centres around the world, one of which is in Maidenhead, and it has recently opened a 70,000 square foot dedicated R&D facility at its Cincinnati world headquarters.

"I don't see any of our competitors going the same way," Nies says. "Too many are public companies whose presidents are concerned with the short-term balance sheet.

"Our problem is one of digestion of our new and modern systems software," Nies says. The user base tends not to understand the value of new products like the fourth generation language Mantis. And Mantis is "understold and underpriced" because users need time to adapt to the new software technology it represents.

Terry Booth, Cincom UK general manager, says the company is having to take a "missionary posture" in selling Mantis. It is a new language, he stresses, but the tendency has been to lump it with less powerful productivity tools. Success is coming, though, and the UK user base has expanded to 50.

What are needed are new high performance interpretative languages which do not need to be compiled, Nies says. Cobol must be compiled. "We are telling customers that we can eliminate the problems with Cobol, but the market can't accept it."

Even Cincom's own salesforce had trouble in accepting the concept, and to get its message across Cincom had to create a new marketing force to sell Mantis.

Mantis is being further developed so that it will be able to run in multiple operating systems.

But while portability of application software is what the user wants, it is not what the major hardware vendors want. The user wants lots of minicomputer systems gathered around a large centralised processor, with software that can move from one system to another.

Whatever lip service hardware vendors give to standards and interconnectibility, hardware manufacturers remain interested in locking users into their systems, Nies asserts.

An example is IBM's latest version of MVS with some of the software in microcode.

"What users want to do is frustrated by what IBM and DEC with its Vax want to do," Nies says. His goal is to be the "IBM-Vax connection."

While most vendors still may be standing in the way of true application software portability across systems, Nies is conviced that Cincom can go "all the way that matters" in ensuring that it will happen. In the process he is bound to ruffle a few feathers.

And Cincom's strategy is not, of course, an altruistic one. It is a hard-boiled strategy for growth.

NIES . . . "Few software companies willing to take risks".

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SDI shares leap, profits pass £1m

by Philip Hunter

PHILIP SWINSTEAD, chairman of Systems Designers International (SDI), was a trifle piqued when his company's shares leapt 25p to 385p at last week's announcement of 1982 profits of £1.06 million, up by £249,000. After all, he pointed out, the profits were only slightly above what SDI had predicted when it came on to the Stock Exchange for a full listing in November 1982.

Why did the stock market not believe us, he asked?

But the stock market has good reason not to believe the profit forecasts of young high technology companies. Even so, Swinstead must really be rather pleased at his company's performance. SDI came on to the Stock Exchange at 210p a share. They were changing hands at 390p late last week, 84% up in just four months.

And 1982 profits were up about 25% in spite of sales costs rising from £4.13 million to £5.29 million, and administrative costs up from £3.03 million to £4.16 million. Turnover was up 32.2% from £7.15 million to £9.45 million.

Sales were helped by two big contracts – one worth £1.7 million from the Meteorological Office and another for £2 million from the Civil Aviation Authority. SDI has just announced a further £2.5 million joint contract with the Solartron Electronic Group to build a war simulator for the Greek Navy.

Such contracts support Swinstead's statement that a further profit increase of less than 30% in 1983 would be "very disappointing".

SDI paid its shareholders a dividend of 1.5p for the half year. The dividend for a full year would have been 2.2p if profits had been the same, according to Swinstead.

The high share price reduces the value of any dividend to new investors. For this reason, the present high price of SDI shares is not an unmitigated bonus, since it makes them less attractive to potential customers of a new share issue. Swinstead says there are no immediate plans to issue new shares in the hope of getting cash for desirable acquisitions.

"But we are very keen on expanding abroad," says Swinstead. In particular SDI is looking to buy a subsidiary in the US. SDI already has its subsidiary Sysdes Inc in Washington, but Swinstead says he would like to buy a US company with 100 staff and a well-established software product base like SDI's own.

But such companies are rare as gold dust, he says. "It is very difficult to find a company selling for the right reason."

SWINSTEAD . . . "We are very keen on expanding abroad."

Kode turns in lower profits after golden handshake

PRE-TAX profits were down 10.4% from £1.53 million to £1.[illegible] million for 1982 at computer maker Kode International. The company blames two extraordinary payments totalling £287,000 for the shortfall. Without these there would have been a slight increase in profit, points out Kenneth Walker, financial director.

One of the exceptional items was a £167,000 pay-off to former chairman Terry Darlow and the other £100,000 was to write off redundant products. But whether share prices will react in sympathy with this optimistic view of the figures remains to be seen.

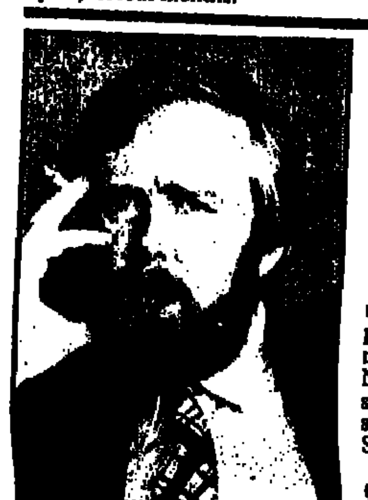
Shareholders do not have so much to moan about. The dividend has been lifted from 7p to 8p giving a healthy price to earnings ratio (P/E) of 23.1. The share price has been rising lately, and they are trading at around 310p compared with a low of 220p for the financial year.

Growth prospects are good, as reflected by the P/E and an order book which is 14% bigger than this time last year. Sales figures just about kept up with inflation, rising 5.0% from £10.59 million to £11.22 million.

Walker denies that management changes had any effect on the performance. "We were just restructuring, and decided that one or two changes had to be made."

Peter Smith took over as chief executive of Kode last September. And in February, the then managing director John May reacted dramatically to the change of management style by leaving and setting up his own company. With him went Clive Marklew, who was promoted by May to general manager of Kode last Christmas.

"It could have been a happier parting," May commented on leaving Kode. "Few words were said."


BALDWIN . . . Bullish predictions.

Scan Data returns to the black

THE ROSES have come out for Sussex-based Scan Data International, which has changed last year's loss of £370,000 into a pre-tax profit of £305,973.

The return to the black was not unexpected – Scan had reported a profit of £78,000 for the first six months of its trading year ended November 1980. But the second six months were better, and the stock market reacted by putting Scan shares up by 17p to 197p.

The shares had been as low as 68p early this financial year after announcement of last year's appalling figures. But now shareholders have the additional good news that Scan is for the first time issuing a dividend, of 2p per share.

Scan shares were first sold to the public when the company came onto the Unlisted Securities Market (USM) the day it was launched for young companies by the Stock Exchange in November 1980. Scan was the first computer company to go on to the USM.

The good results seem to justify the bullish predictions made by Martin Baldwin, chief executive and deputy chairman, after last year's bad figures came out.

Scan markets Texas Instruments minicomputers, and Onyx microcomputers. The Onyx box is imported from the Onyx Corporation in the US, and the computers are assembled by Scan. Because of the soaring dollar, Scan incurred an "exceptional deficit" of £25,582 from the cost of importing the Onyx boxes. But this is loose change compared with the exceptional deficit of £345,596 in the 1981 trading year caused by the development of the Onyx.

This year Scan has been selling rather than developing Onyx computers, which accounts for the return to profitability, and the 26% turnover increase to £4.3 million.

Scan's results were also jollied along by the resolution of the dispute in January 1982 over who had the right to distribute the Onyx microcomputer. Scan then bought the name and trading rights to Onyx Distribution.

On March 1, 1983 Scan acquired the name and trading rights of Mercator Technical Services to complement the purchase of Mercator Business Systems Inc by Onyx in the US. Scan now maintains and supports services at the 130 UK microcomputer sites formerly owned by Mercator.

Cash-hungry companies can take the USM road to growth

THE CHEAPEST way for a young company to raise money for research or growth is often to go public on the Stock Exchange. But not always. If the company is valued at less than £2 million, the cost of preparation could take such a large chunk of the money raised from the sale of shares that it would have been cheaper to borrow from a bank.

Partly to make the stock market more attractive to small young companies, the Stock Exchange created the Unlisted Securities Market (USM) in November 1980. The USM has already proved popular with computer companies, which account for 20 of the 100 companies now listed on it. Another 24, including CAP, Data Training and Pactel, had senior representatives at a recent seminar on the USM held at the Stock Exchange by brokers Smith Ken Cutler. These companies had not just come for the excellent lunch at the City of London Club.

The USM has four advantages over a full listing: Any size of company can join; only 10% of the equity, or total shares, have to be made available to the public; only three years' trading record is needed; and, last but most important, it is cheaper.

The main saving is in advertising costs. The Stock Exchange insists that for a full listing, a complete prospectus, including trading figures for five years must be published in at least one leading newspaper, usually the *Financial Times*. This costs at least £45,000, since the advertisement usually fills three pages, at £15,000 a page.

For the USM it is necessary only to advertise a summary prospectus at a cost of about £1,000.

The biggest costs are the fees of accountants. These depend on the work involved, and so are greater for a bigger company, but always seem astronomical.

It is clear from the tables that although there is no minimum limit on the size of company for the USM, the total cost is unlikely to be less than £50,000 and therefore takes an unacceptably large chunk of the money raised from placing shares if the company is valued at less than about £1 million. In the examples given, the cost was 14% of total money raised in the case of a £2 million company, and only 4% for a £10 million company.

Once on the USM, it is quite cheap to progress to a full listing, with more attendant publicity, because most of the preparation of accounts has already been done. The Star Computer Group last year made such a move at an extra cost of about £15,000, after spending £67,000 to get on to the USM.

One disadvantage of the USM and a full listing is that financial information has to be made public, with greater danger of the Press nosing around in unwanted places. There is also greater risk of takeovers when things are not going so well, although this is less likely when the directors retain a majority of the shares.

And there is a danger of paying capital transfer tax when the shares were previously owned by a family and then double in price on the Stock Exchange. The taxman has an annoying habit of valuing shares at their current price rather than at the original price they fetched on release into the stock market.

In order to enter the USM, a company must have a sponsor, either a merchant bank, or more often a stockbroker. Usually the sponsor must have at least three years' trading record for the company in order to assess its eligibility, although in exceptional cases, a company without a trading record but with a well researched project will be allowed on the basis of profit forecast.

It is the sponsor's job to determine the price of the shares by examining potential profits and the success of other companies in the same market.

The sponsor must have at least 10% of the company's total share capital to dispose of in the USM. Most of this will often go to the sponsor's clients such as big institutional investors like the pension funds. But at least 25% of the shares made available must be offered to the jobbers, who are the bookies of the stock market. The jobbers buy and sell shares on the floor of the Stock Exchange.

A COMPANY VALUED AT £2 MILLION PLACING £500,000, 25% OF CAPITAL

	USM	Full Listing
Advertising	£1,000	£45,000
Printing	£10,000	£12,000
Stock Exchange fees	nil	£1,000
Professional costs	£60,000	£70,000
	£71,000	£128,000

Example 1

A COMPANY VALUED AT £10 MILLION PLACING £3 MILLION, 30% OF CAPITAL

Advertising	£1,000	£45,000
Printing	£10,000	£12,000
Stock Exchange fees	nil	£3,600
Professional costs	£120,000	£140,000
	£131,000	£200,600

Example 2

These are typical figures, and the actual cost will vary according to the size of the company's prospectus, and the amount of professional work involved. But generally the larger the company, the smaller the cost as a percentage of money raised from the sale of shares.

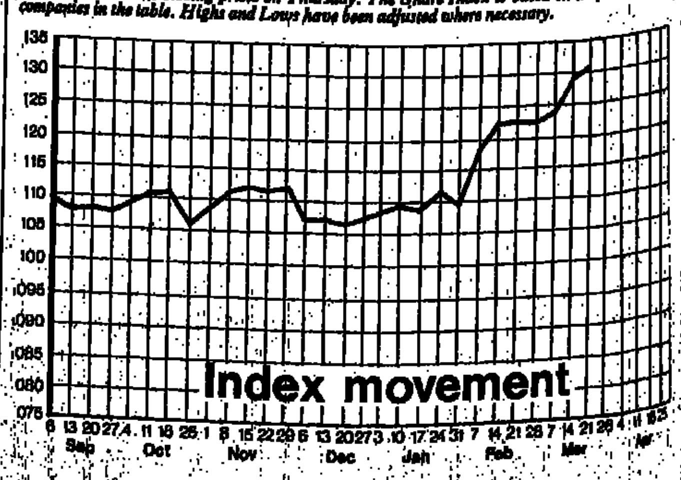
SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, shows selected computer companies that reflect the state of the computer industry.

Date 18/3/83 — Index 139.80 — Change +1.8

Pence 1983 High	Low	London Stock Exchange Stock	Pence Price	C'nge	$ 1983 High	Low	US Stock	$ Price	Chg
395	240	ACT (App Comp) (25p)	395	+17	43½	30¼	Amdahl	[illegible]	[illegible]
214	178	BOC Int (25p)	200	−14	48¼	29¼	Apple Inc	[illegible]	[illegible]
61	41	B. Boy Kent (25p)	61	–	38¾	34¾	Auto Data Pro	[illegible]	[illegible]
161	124	Chubb (20p)	161	+18	48	43¼	Burroughs	[illegible]	[illegible]
178	136	Cole Group (25p)	136	−10	16	14	Comp Auto	[illegible]	[illegible]
215	152	C.A.S.E. (20p)	210	–	23	17¼	Comp Sciences	[illegible]	[illegible]
665	545	De La Rue (25p)	617	−13	12	10¾	Comshare	[illegible]	[illegible]
323	284	Excel (25p)	313	−10	60	38¾	Control Data	[illegible]	[illegible]
506	411	Ferranti (50p)	505	+8	48¼	38¼	Cray Research	[illegible]	[illegible]
217	182	GEC (5p)	202	−10	60¼	41	Data General	[illegible]	[illegible]
82	67	ICL (25p)	77	−5	24½	18¼	Datapoint	[illegible]	[illegible]
44	41	Kalamazoo (10p)	41	–	40½	34½	Dataproducts	[illegible]	[illegible]
340	278	Kode Int (25p)	340	+20	127¼	98½	Digital Equip	[illegible]	[illegible]
365	270	Memec (10p)	365	+45	58	47	Elec Data Sys	[illegible]	[illegible]
190	154	Muirhead (25p)	166	−3	39½	19¾	Gould	[illegible]	[illegible]
634	458	N'market (1981) ($0.05)	634	+30	61	38¼	Harris	[illegible]	[illegible]
2155	997	Norsk Data	1925	+75	86½	75¾	Hewlett-Packard	[illegible]	[illegible]
320	220	Office & Elect (25p)	260	−10	88½	85	Honeywell	[illegible]	[illegible]
965	710	Philips Lamp (Fl 10)	965	+7	46½	40¼	Intel	[illegible]	[illegible]
629	554	Plessey (50p)	560	−13	101¾	95½	IBM	[illegible]	[illegible]
47	32	Quest Auto (10p)	47	+15	82¾	54¼	Litton Ind	[illegible]	[illegible]
594	444	Racal Elect (25p)	463	−5	17¾	15¼	MDS (Mohawk D)	[illegible]	[illegible]
275	223	Rediffusion (25p)	265	−10	25	19	MSA (Mgmnt Sci)	[illegible]	[illegible]
282	252	Star Comp (10p)	255	−15	16½	12¼	Mngmnt Assist	[illegible]	[illegible]
390	275	Systems Des (10p)	390	+30	14½	11¼	Modular	[illegible]	[illegible]
497	418	Thorn-EMI (25p)	492	−4	114¾	84½	Motorola	[illegible]	[illegible]
177	135	UC&T (50p)	175	+5	33¾	26¼	National Semi	[illegible]	[illegible]
		Unlisted Securities Market			108¼	87½	NCR	[illegible]	[illegible]
86	75	Bus Comp (10p)	75	–	32	27¼	Perkin-Elmer	[illegible]	[illegible]
205	148	Consult (C&P) (10p)	205	+15	44¼	37½	Prime	[illegible]	[illegible]
178	158	Int'europe Tech (20p)	178	–	52½	44½	Raytheon	[illegible]	[illegible]
247	240	Io Tech (25p)	245	+5	33¾	26¾	Signal	[illegible]	[illegible]
60	27	Knight (5p)	60	+5	38½	33½	Sperry Corp	[illegible]	[illegible]
215	160	Memory Comp (IR10p)	205	−5	24½	21	Storage Tech	[illegible]	[illegible]
258	205	Micro Bus (10p)	257	+2	29¾	24¾	Tandem	[illegible]	[illegible]
389	310	Microgen (10p)	365	−10	58½	50¼	Tandy	[illegible]	[illegible]
200	135	Miles 33 (10p)	197	+2	171	133¼	Texas Inst	[illegible]	[illegible]
210	158	NMW (£1)	200	−10	35	18¾	Tymshare	[illegible]	[illegible]
119	81	Rolfe & Nolan (10p)	115	–	36½	31½	Wang Lab B	[illegible]	[illegible]
197	110	ScanData (10p)	177	−20	12½	8½	Wyly	[illegible]	[illegible]
80	70	Trident Comp (10p)	70	–					
85	66	Zygal Dyn (5p)	70	+5					

The table shows the closing prices on Thursday. The Share Index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.



Intel's 32-bit chip set gets upgrade

INTEL has revamped the performance of its true 32-bit iAPX 432 chip set. Two support chips have been added, bringing the set up to five, microcode changes make the CPU fully compatible with the latest Ada version, and the maximum clock rate has been upped from 5 MHz to 8 MHz.

"From the Intel point of view, release 3 will be the proof of the pudding," says North Europe marketing manager David Mayes. "With this silicon and software we are finally reaching – after a longer gestation than we would have hoped – the sort of performance we predicted early on."

The two support chips, a fault tolerant bus interface and memory control device, join the two-chip general data processor and the interface processor.

They perform functions previously left to a clutch of lower level chips, reducing board space needed to build systems, and support dynamic memory control, error detection and correction, and multi-processor arbitration.

The bus interface unit takes access requests from a 432 processor and decides which memory bus or buses are used to perform the access. It contains small programmable logic arrays to control the sequencing needed by a system.

The memory control unit deals with dynamic RAM refreshing, correction of single-bit errors and detection and reporting of double-bit errors.

It also automatically scrubs all memory as a background operation, reading the storage array, correcting single-bit errors and reporting any double-bit errors.

At the moment, engineering samples of the revised chip set, which also boasts microcode changes to handle virtual memory and improved instruction execution speed, are being released only to a limited number of companies.

These are all existing customers of Intel's 432 chips and development systems, says Mayes. Real production availability will not be until September.

MAYES . . . "Proof of the pudding" for Intel's 432.

Small systems spread

SMALL commercial systems are getting smaller. According to a report* from New York based marketing consultancy Quantum Science, by 1986 90% of installed commercial systems priced up to $200,000 will have cost less than $15,000 each. The study predicts that there will be over six million of such sub-$200,000 systems by 1986.

The main users of these systems will continue to be large companies, and shipments to them will grow by nearly 50% a year, says the report, with 1.1 million units shipped in 1986.

The spread of applications they require has created a fragmented market that offers rich opportunities both for established vendors and newcomers to the small computer sweepstake.

The study identifies middle management in marketing and sales, finance, personnel and R&D/production departments as the most prolific users of such systems within large companies, along with software developers.

Demands for greater capabilities in data presentation, transmission and retrieval overshadow simple data analysis and calculation capabilities, and the power to interface to personal computers, host computers and online databases is becoming a condition of purchase.

Management see a need to be able to share data, software and peripheral resources.

*Computer Systems Strategy Programme, Volume IIB: Personal computers are creating their own opportunities in large enterprises. Quantum Science, 16 Charles II Street, London SW1Y 4QU. Tel: 01-839 5347.

Double storage for exchangeable discs

EXCHANGEABLE hard disc cartridges, put forward by some as the panacea for Winchester disc back-up problems, are starting to make it big in the UK. While the bandwagon for fixed/removable disc units from CDC, Vermont and Cynthia Peripheral gathers speed, last week saw the UK arrival of a unit from Amcodyne which more than doubles the amount of data squeezed into eight-inch fixed and removable discs.

Amcodyne's Arapahoe 7110 drive, distributed here by Harrow-based Legend Data Products, carries 25 Mbytes on both the sealed fixed disc and the Ansi-standard removable cartridge, compared with the 10 Mbytes on each with CDC's Lark and 11 Mbytes with Vermont Research's British-designed VRC 8520.

"We are launching Arapahoe now in the UK," says Legend managing director David Ahmed, "and will be shipping evaluation units next week. Volumes should come by the end of May."

The Arapahoe drive uses Whitney technology – like Winchester, an IBM code name – which Ahmed says gives better data reliability and density through improved aerodynamic stability and higher signal-to-noise ratio than that attainable with Winchester technology.

The Whitney head suspension was first developed by IBM for its 3370/3380 mainframe disc storage devices. Amcodyne reckons to have improved on it for removable cartridge applications by developing the servo control, clean air system and ramp-loading head. The disc is already flying as the head moves in.

Ahmed sees his prime market as 16/32-bit Unix systems, wanting fast response, high capacity and removable media to ease back-up. But he is also looking for distributors to other particular areas, like Multibus systems, S-100 bus, DEC, Data General and SASI bus – the last of which should open up the way to IBM PCs and the like.

"Sales are not going to be our problem," he claims. "There will also be a market as CDC Lark replacements since we have a smaller unit, better technology and more readily available cartridges."

For the future Amcodyne is looking towards higher capacity eight-inch drives.

AHMED . . . Sales no problem.

UK launch for Danish LAN

by Donald Kennett

A NEWCOMER to the UK local network market, the Danish mini and microcomputer manufacturer Christian Rovsing, launched its X-Net system early this month, at Online Localnet 83 Conference in London.

The company set up its UK subsidiary last summer. Its first product was a Danish designed private viewdata system, but it has been selling its CR80 front-end communications processor through ICL for five years.

The X-Net range also started selling five years ago, but only in Denmark at first and then to NATO. The first installation consisted of 18 X-Net local area networks interlinked as a message, packet and circuit switching system for the Danish FIKS defence communications network.

UK manager Steen Christensen says the company has now sold 50 networks to support a total of 85,000 terminals and computers. In the UK he will be aiming for the process control and energy management sectors, but declines to discuss his sales targets.

The network is a baseband bus with a data rate of two million bits per second which can be increased to 16 million bps on any site independently of the others. It uses twisted pair cable because, according to support engineer Troels Myram, this has greater immunity to electrical interference than any other type of copper cable.

But a major design goal of the network is to provide intelligible connections from any type of terminal to any type of host resource.

This means that protocol conversion is implemented in the network's Z80-based terminal adapters, with the conversion software loadable downtime from the host that is logged on to.

Any dumb terminal can be made to look like a standardised intelligent terminal whichever host it is connected to.

ASA says Acorn ads misled public

BBC Microcomputer maker Acorn is in the Advertising Standards Authority's bad books again. This month the problem was with an advert highlighting expansion capabilities of the machine, featuring various peripherals and software to add on to it.

The implication was, says the ASA, that these were currently available – a contention borne out by Acorn's inclusion in the advert of an order form detailing many of these items. The ASA upheld the complaint about the unavailability, and expressed concern that the publicity material had been prepared without due regard for its code of standards.

Floppy choice widens

THE UK microfloppy scene, so far limited in choice to the Sony 3½-inch drive, Canon's 3.8-inch and the ever hopeful Hungarian MOD-1 even for sample units, is picking up.

US manufacturers Tabor and Shugart both now have sample units with prospective UK customers and are gearing up for high volume sales by June. By then fellow US drive manufacturer Tandon plans to be close to volume deliveries, too, though it will not start sampling until May.

Hitachi is set to sample units this week, again for summer volumes.

Both the Shugart and Tandon drives follow the 3½-inch format picked upon by Sony. Shugart takes the revised version put forward to Ansi by the self-styled Microfloppy Standards Committee – led by Shugart – which puts half a megabyte on to a single-sided disc. A double-sided version is due by the end of the year.

Pricing for the Shugart unit is as yet imprecise. It will depend on volumes particular customers want and the deals they can swing, but should come out at much the same per Kbyte as current 5¼-inch units.

Shugart's drive uses the same disc media – in protective plastic cartridges – as the Sony unit. At last week's Invitational Computer Conference in London it favoured the Verbatim discs. The Tandon TM35 goes for the older Sony disc, with manual shutter rather than the spring-loaded one found on the Shugart and the later Sony units.

Hitachi goes with a smaller cassetted disc than the Sony camp, and it was supplies of these that held up sampling for a while, says the company.

Tabor uses a 3¼-inch disc in a soft vinyl jacket, produced by media maker Dysan.

Cray goes for speed

SUPERCOMPUTER builder Cray Research is going for gallium arsenide to gain extra speed. It has signed up Harris Microwave Semiconductor, active in developing and manufacturing gallium arsenide (GaAs) circuits for high speed communications applications, for a joint programme to explore the use of GaAs devices in supercomputers.

Cray chairman John Rollwagen reckons silicon speed limits have now been reached, and GaAs, coupled with CMOS and other technologies, will be the technology of the future as far as speed goes. GaAs devices can operate at speeds up to five times that of silicon-based equivalents. It is now felt that the technology is well enough established in microwave and signal processing applications to come out of the closet for very fast computers.

Micro News is compiled by Robert Parry.

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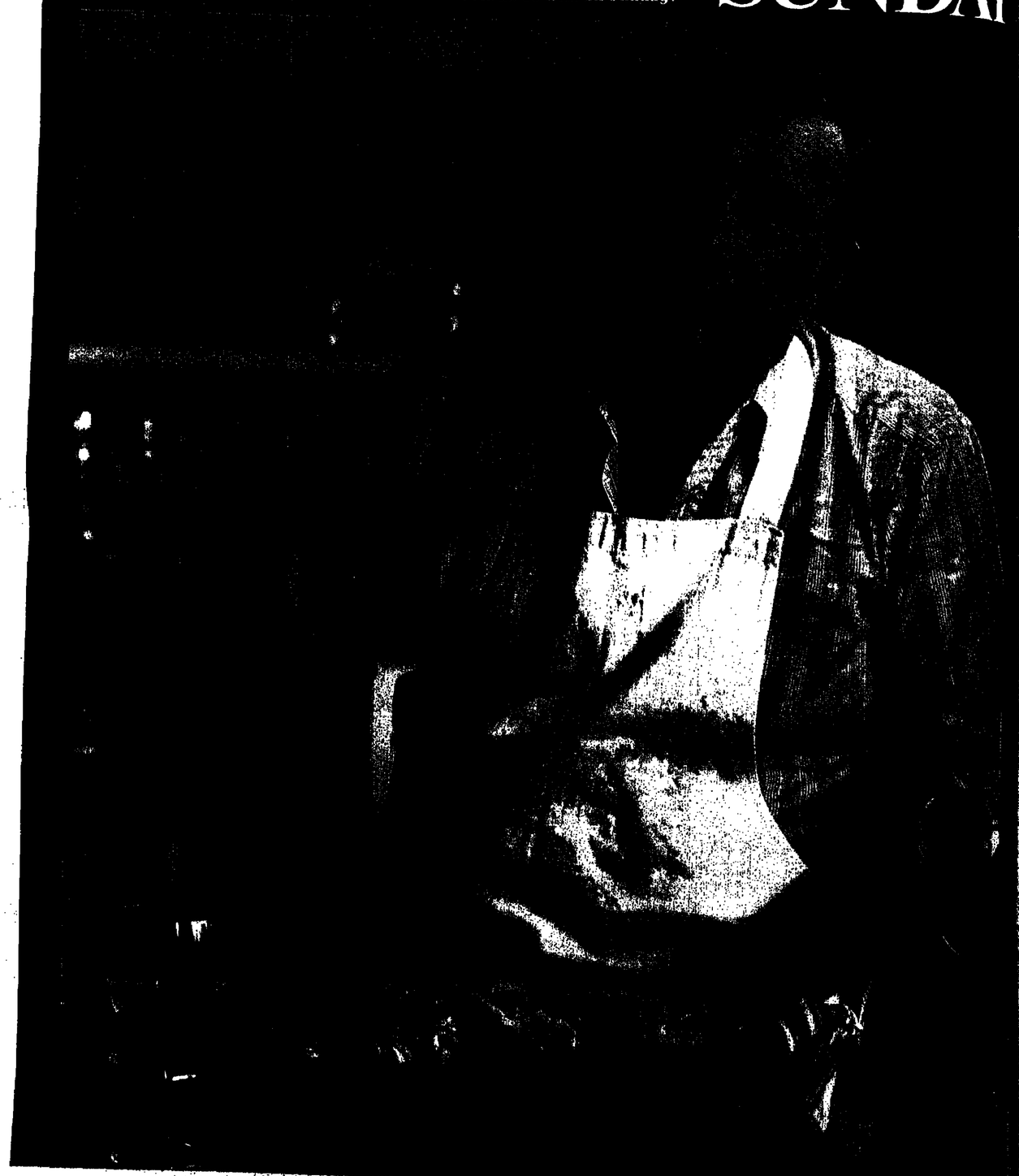
SIR TERENCE CONRAN'S SUNDAY

His design talent brought modernity to the masses. His business sense brought him Habitat, Mothercare and now Heals. Recently knighted for services to industry, what does Terence Conran do with his Sunday?



As we're not allowed to trade on Sunday–much to my extreme irritation and disgust–we usually spend the day at our house in the country.

I find as I get older that I can't sleep till 11.00am as I used to, so I generally wake up at about 7.00am and lie around till 8.00am.

Then I go downstairs in my dressing-gown and have breakfast, just a cup of coffee, which stretches on until 10.30am or 11.00am.

At breakfast I get a lot of pleasure from the papers, which are sent to the dairy next door where I collect them. They are interesting and relaxing at the same time and I find that reading them is all part of that quiet Sunday morning feeling when I can sit there with no sense of urgency or worry that I must rush off and do things. It's the only calm time of the week and it's all bound in with papers–if I'm abroad I miss them quite a lot.

I usually read the front page of The Sunday Times and then an article inside if there's something that particularly interests me. Then I move on to the business section and the various review sections. Last of all I look at the colour supplements, but the children will usually have grabbed them by then.

As they come down to breakfast, other members of the family take various bits of The Sunday Times away with them so that you end up with it spread around the room like confetti.

We try not to go out on Sundays since it's a large country house with lots of things happening all the time. We have a big garden with horses for my wife to ride plus greenhouses and a workshop which we use for everything from simple repairs to making furniture.

Also I enjoy cooking very much and Sunday is the one day of the week when I get the chance. We often have a lot of people coming for lunch and I do the shopping for it on Saturday. In the summer I collect vegetables for the lunch from our vegetable garden. I'm very involved with this garden, not through manual work but in terms of making decisions about what's to be done with it.

For me the enjoyment of cooking comes not just from the end product but from the tactile pleasure of working with the food. In its raw state food gives me an aesthetic pleasure.

Lunch sometimes stretches on till 4 or 5 o'clock and then in the evening when the guests have disappeared, the papers come out again and I look at the things I have missed. I have an enormous amount of boring business reading to do and the papers make a very good sandwich filling for a long report or board document.

On some Sundays, though, if it's cold but sunny I'll go into the greenhouse and sit there with the papers for most of the day. There's a musty smell of plants growing, an optimistic smell when everything else around seems to be dead.

The Sunday Times business section is inevitably very important in terms of my professional life. It'll give me a résumé of the week's secrets and the business editor's idea of what's going to happen next. He has a hard job finding something on a Saturday that will add to the rest of the week's news but he does it very successfully. I even read it right down to the job ads to see what other people are offering and looking for.

The arts review interests me in a personal, non-professional sense. I read all the visual arts criticism and also the Look section because so much of my professional life is concerned with selling things to women.

I also look at the ads in the magazines out of professional interest. But I find the magazines are not really conducive to reading–they are there to be looked at.

I think the TV coverage is very good in The Sunday Times, both the newspaper and the week's television preview in the magazine.

I have a strip of paper on which I jot down all the things that occur to me from getting new shoelaces to noting currency fluctuations or deciding to buy a new shop. The great thing about Sunday is that it gives me time to have ideas, particularly creative ideas such as dreaming up designs for furniture. Sometimes I find myself totally exhausted by Sunday evening–it's not been the restful day I had planned at all.

In a recent survey by the New Business Research Consortium, several interesting facts emerged:

◆The Sunday Times is read by more businessmen than any other newspaper.

◆The Sunday Times is the only quality Sunday to have increased its businessmen's readership since 1980.

◆The Sunday Times has market leadership in most of the important occupational areas, including: marketing, 43.5%; computing, 32.5%; finance and accounting, 38.5%.

◆The Sunday Times has more readers in all the following categories: top income bracket, 51%; 2-car families, 36%; credit card ownership, 35%; value of shares £10,000+, 53%.

Almost every indicator showed The Sunday Times to be the top paper for business men and women.

For more information about display advertising, phone Mike Ruda, Advertisement Director, Times Newspapers 01-837 1234.

SUNDAY TIMES MAGAZINE

More businessmen read The Sunday Times than any other newspaper.

THE SUNDAY TIMES

... Ezra Levin, Chairman of Honeywell, looks at Japanese competition and the growing calls for protectionism in the US. An expanded version of his remarks can be found on pages 22-23.

Japan must be a full partner of the West

THE electronics industry finds itself increasingly threatened by Japanese competition.

But trade restrictions are likely to lead to trade wars and a reduction in the flow between countries of goods, services and investments. The increasing freedom of trade and investment since World War II has been a major contributor to rising prosperity throughout the world.

Japan is a nation that must export or die. It is likely in most years to have a heavy surplus in manufactured goods exports with other leading industrial markets. This surplus is used to pay for the petroleum, coal, raw materials and agricultural products Japan needs to fuel her economy and maintain the prosperity of her people. In turn a healthy Japanese economy is the underpinning of a stable democracy and strong international friend of the United States.

Japan has built her industry behind a curtain of protectionism following the industrial destruction of World War II. Much of the protectionist wall has come down, but more remains to be done in specific product areas and in the area of administrative guidance by the Japanese bureaucracy. If, however, all these remaining barriers were to be dropped, it would not by itself significantly increase the ability of American exporters and investors to penetrate the Japanese market.

There remain cultural or systemic factors. These can be overcome, as some US companies have done, by taking a patient and long-term approach to developing the Japanese market.

There are some factors working in favour of reducing Japan's competitive advantage in export markets. In the short term, the yen is strengthening as US interest rates drop, and in the long run the Japanese economy is maturing and becoming more service-oriented as is already the case in the United States and Europe.

The solution to the immediate problems of the electronics industry, and other US industries threatened with rising imports from Japan, does not lie in raising tariffs or establishing quotas.

The real economic pressures created by worldwide recession and rising unemployment are creating strong political pressures to protect jobs from foreign competition. The stakes are too great, however, to permit a roll-back of 30 years of progress towards freer world trade. Historical examples are there to show us how apparent short-range advantages of protectionist measures lead to long-range loss of competitiveness and declining prosperity.

There is much to envy – and to try to emulate – in Japan's industrial success– There are cyclical factors that will work in our favour with regard to Japanese competition. The yen is weakening. Japan's economic growth is slowing. Her labour force is aging.

Japan will always be a formidable competitor for many of the same products the US and other advanced industrial countries produce. We must keep negotiating pressure on Japan to eliminate the remaining barriers to freedom of trade and investment, even though the redoubtable increase in US exports to Japan may not be significant. Japan has to become a fully-fledged partner, along with Germany and the United States, the three engines of the free-world economy.

Ed Spencer

The director who achieved success without slaughter

FERRANTI is a very British company – not quite old-fashioned, but with that air of solidity which always attaches to a good engineering outfit.

The people who work for Ferranti, especially in the factories, are the very antithesis of the flashy American marketeer. They have a craftsman's pride in the products they build.

Those products are known everywhere for their quality, and in the field of uncommitted logic arrays the company is a straight world leader in the field – with market share to prove it.

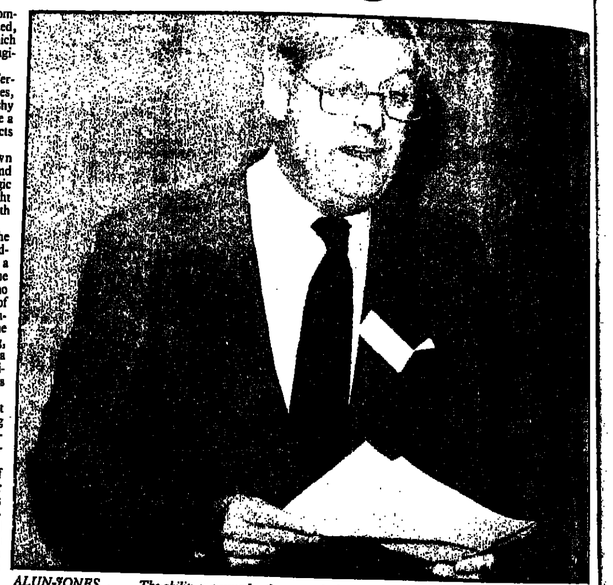
But often the factories, in the North of England and the Midlands, are old-fashioned – just a bit dull. Which, apart from the magnificent riverside views, is no bad way to describe the office of managing director Derek Alun-Jones in Millbank Tower near the Tate Gallery in London. It is big, airy and nicely functional – a place where a working man, definitely not an "official", spends his time.

Alun-Jones' path to the top at Ferranti came via an early training as a lawyer, and not through engineering, with which he has so completely identified himself.

He was managing director of Burmah Industrial Products prior to the collapse in Ferranti finances in 1975 which led, first to a government rescue via the National Enterprise Board, and then to his own appointment to the board. In those days (1976) Ferranti's turnover was £100 million and its role as a vital cornerstone of the nation's technological edifice and its defence effort was less clearly perceived than it is now.

A measure of Alun-Jones' approach, and a fair measure of the man, is that he achieved the turnround without the loss of a single senior manager.

Not only that, he managed to preserve the company's R&D projects which had been partly responsible for the financial collapse. Those projects are now the backbone of the company's semiconductor, computer and defence product lines.



ALUN-JONES . . . The ability to persuade others to make his decisions work.

Perhaps the most significant item to emerge from the years of recovery was the uncommitted logic array, whose role in the computer industry is now becoming so central that it's hard to remember a time when it was not in use.

The concept of the uncommitted logic array is perhaps the best guide to Alun-Jones' decision to stay with the product. It is a semiconductor device, containing various microfunctions, and built for a specific task or a specific customer requirement.

As Alun-Jones describes it, it is an unique personal product for the customer, whose production requires unique engineering skills – Ferranti's strong point.

Last year Ferranti held a lead in the technology, grew to capture 30 per cent of the market and sold the bulk of its products in Japan.

To generate this industry, which employs 1,700 of the Ferranti workforce, the government doled out £10 million over 10 years, making GEC, Ferranti, Racal and Plessey share the pot of gold.

Alun-Jones is cautious, weightily decisive and, above all, has the ability to persuade other people to make his decisions work.

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, March 24, 1983

Hamstrung by party dogma

INDUSTRY Secretary Patrick Jenkin commented last week that the government was looking at the proposals of the Alvey Committee in the light of its unhappiness with the big science projects in the past. He pointed in particular to what little they had produced in the marketplace.

Some support for Jenkin's doubts comes from a report published today by Matthew Bullock, a senior Barclays Bank manager, who made a nine-week study tour of the US (see page 3). Bullock suggests that it is more important for universities to encourage academics to get involved in small, research-based consultancy firms than to set up science parks on their campuses.

Jenkin made his remarks while giving details of how the Budget would support innovation. While he emphasised that the Tories were spending twice as much on technology as when they came to power, he avoided any commitment to funds for the £350 million, five-year plan as outlined in the Alvey report.

But Jenkin's emphasis on "big science projects" seemed to miss the point of Alvey's recommendations. Or if he did not miss the point, he may have been looking for a way of distancing himself from a programme which does not mesh with Thatcher's dogma of non-intervention in the marketplace.

Throughout the Alvey report there is emphasis on the need to bring products to the market as soon as possible. A way of attaining this objective is to ensure the widest co-operation between academia and industry.

What disappoints in the government's attitude is that it does not seem to have come a very long way since its April 1982 Budget. All the cliches of "resolve", "consistency," and so on are rolled out to make a virtue of the government's stance. But in the meantime there is still the need for a co-ordinated government policy on information technology.

Bullock, in his report, says that UK government officials and MPs do not fully recognise universities as prime sources of technological innovation. He also criticises the attitude of universities themselves, and adds that the most important factor in getting academia involved in commercial projects is the "attitude of the university towards the private involvement of staff in consultancy and other direct commercial interaction".

Surely what the government must try to do is to bring some order into what is a confused situation. That, as much as anything, is what Alvey is about, particularly in the recommendation for an overall directorate to co-ordinate information technology. The Alvey proposals do not fall into the category of throwing money at a problem; of the £350 million asked for, £250 million would come from government over the programme's five-year span, or £50 million a year. That money rather pales in comparison with the estimated £260 million it cost the government in a full year to increase mortgage relief from £25,000 to £30,000.

An example of the confusion generated by the government's piecemeal approach to information technology came last week at a European computer graphics conference in Berlin. An assistant secretary of the Department of Industry told the conference "how difficult it is to attract the client's interest against so many competing activities. . ."

The general "noise" level, to take the secretary's word, explains why there has been such a poor take-up under many of the government administered schemes to promote technology. And that in spite of general agreement that many of the individual schemes are well-conceived.

The Bullock report says that government support and tax policies are not as important as the role of the marketplace. But it also draws attention to the support the US government gives to fledgling technology companies in the way of long-term contracts.

What is important is that dogma does not interfere in the promotion of new ideas and new companies. At the moment government dogma does seem to be standing in the way of a UK information technology policy.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Della Venables of Lewes, Sussex, who wins £5.

A 32-bit computer can address four trillion items of information. That's the same as knowing the names of all four billion people on earth, with room to know the names of everyone in the world even if the population should grow to 1,000 times larger.

Information Technology News

LETTERS

Systel went from scratch

THE article (Software Month, March 10) contains a caption which may imply that Systime made use of all or part of the DEC TPM 70 product during the implementation of the company's own product Systel. This implication is entirely untrue, every part of Systel being written by Systime staff from scratch.

Systel was originally implemented by Systime for the PDP/11 and Vax series of Digital Equipment computers. There has been a continuous development of the product since 1978, with the facilities of the Vax product now far in advance of those of the PDP/11 product, which in turn are, in our opinion, far in advance of TPM 70.

IAN McNEILL
Director of R&D

Systime
Leeds.

The Editor welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication. Letters may be cut.

Study of skill shortages

AS part of a wider project being conducted at this college, to investigate the social impact of high technology, we are conducting a study of the employment generated within the computer industry, through the implementation of computer applications. We would particularly like to know whether any smaller businesses engaged in computer use, or the provision of computer services, are at present seriously held back by shortage of personnel to create the software or hardware systems required.

We would be pleased to hear from any employer who would like to write to us, concerning skill shortages which may currently be affecting productivity or causing difficulty in expansion.

Information provided would be used only on a statistical basis, and individual firms can be sure of confidentiality.

E M DALBECK
S J GOLDSACK

Dept. of Computing
Imperial College
London SW7.

IBM Personal franchise

IN the feature (CW, March 3), apart from misquoting my name and the fact that I am one of the co-founders, not the founder, you made a number of statements that seriously misrepresented the facts given by me during a telephone conversation, which in turn misrepresented two corporations, namely IBM and Information Builders Inc.

I wish to put on record the correct facts.

1. It is *expected* that, when IBM announces the Personal Computer in Qatar, Almana Tangent will obtain the local franchise.

2. Tangent expects to do around £400,000 of business in the US with *independent support* to the Focus product. Focus is the fourth generation software product from Information Builders Inc, and is in no way owned, or part owned by Tangent, as the article may imply. Tangent is bringing independent support to UK Focus users this year.

P. C. WATTS
Chairman

Tangent Computer Services
Romford
Essex.

Prolog is now being served

YOU HAD two articles relating to Prolog (CW, March 3) one solely concerned with the Prolog systems from my company, and the other about Poplog and the Lisp/Prolog debate.

Both articles failed to mention that we provide Prolog compatibly under four operating systems (including CP/M) now, and more, the Poplog article stated that the only commercially available full Prolog systems are those from Sussex, York and London (Imperial College) Universities.

On the contrary, we are the only organisation whose main business is implementing, supplying and supporting Prolog systems for commercial use, rather than being an offshoot of an academic research department. All our implementations are "full" implementations, including our CP/M Prolog.

ALEX GOODALL

Expert Systems
Oxford.

Prolog systems are also implemented, supplied and supported by Logic Programming Associates (LPA) of London. Although LPA has links with Imperial College, it is a completely independent commercial organisation whose only business is in Prolog systems. – Editor.

Buying to Sell?

An important conference for companies buying products to sell on to the user

The Computer Trade Show '83

The Computer Trade Conference is a vital opportunity to learn how to buy in systems, software and peripherals and sell them profitably to your market.
The editorial resources of Computer Weekly, Systems International and Practical Computing have combined to stage a two day conference covering the sales of medium and small systems and products to both professional and home computer user.
Ranging from mass storage to software, and from IBM to the best vertical market, the conference will run alongside the first Computer Trade Show at the International Wembley Conference Centre and be held on April 26 and 27, 1983.
Make a date to share the experience of suppliers and vendors alike.

PROGRAMME TUESDAY, APRIL 26

09.30 Registration and Coffee.
10.00 **What hardware should you sell?** — the amount of technology on the market is bewildering. What products and types of devices are here to stay, and more importantly, which can make money for you?
10.30 **What software should you sell?** — It is tempting to go for the established products such as CP/M, Wordstar and Visicalc. But is this the best route to success?
11.00 **Who should you sell to?** — are vertical markets the way forward, or is a more general approach to marketing called for?
11.30 Coffee.
11.45 **Support** — how much should you give? — are cut prices and a cash and carry attitude preferable to comprehensive user support, or is there room for both methods?
12.15 **What a software house looks for in a dealer?** — a leading software house explains its selection criteria for the organisations which will be its interface with the consumer.
12.45 Lunch.
14.00 **Selling and licencing through large manufacturers** — you may have a product needed by a major computer company. How should you go about convincing them?
14.30 **Dealing with the majors 1** — ICL and the Traderpoint scheme.
15.00 **Dealing with the majors 2** — IBM and its attitude to third party vendors. A rare chance to get behind the facade of this enigmatic giant
15.30 **Dealing with the majors 3** — DEC and its authorised dealer scheme. The world leader in minicomputers talks about selling for them.
16.00 Close.

WEDNESDAY, APRIL 27

09.30 Registration and Coffee.
10.00 **What's new? — hardware developments** — an overview of the current state of the art. Everything you ever wanted to know about micro floppies, low cost printers, Winchesters and local area networks.
10.30 **What's new? — software developments** — database management, operating systems, and the latest trends in applications software are discussed.
11.00 **Putting it together — the problems of plug incompatability** — what fits with what, and what won't. A look at putting together turnkey packages.
11.30 Coffee.
11.45 **Marketing your own product** — a software house case study. A behind the scenes look at how to do it right the first time.
12.15 **Selling yourself** — how to get your name known by the right type of customer. The power of advertising should be working for you.
12.45 Lunch.
14.00 **Don't ignore the man in the street: a case study** — home computer users are becoming more sophisticated. High volume. Low cost products may be right for you.
14.30 **Selling into business: a case study** — higher unit costs appear attractive, but is the commercial user a tougher nut to crack than the home user?
15.00 **Selling a US product in the UK** — there's a vast pool of packages across the water. How, and why, you should sell them to the British consumer.
15.30 **A future look** — where will you be in a year's time.
16.00 Close.

and here's your invitation

REGISTRATION FORM Please complete in block capitals and send to: Conference Administrator, Room 1313, Surrey House, Throwley Way, Sutton, Surrey SM1 4QQ. Tel: 01 643 8040. Ext. 4890 and 4892

Please reserve ..... places for the Computer Trade Conference.
Please send me details about exhibiting ..... visiting the Computer Trade Show (tick where appropriate).
Please indicate which sessions you will be attending
April 26 . . April 27 . . The fee of £170 plus £25.50 VAT for two days or £90 plus £13.50 VAT for one day covers attendance, coffee, lunch and conference documentation. Tax invoice will be sent.
Name .....
Position .....
Company .....
Address .....
..... Tel .....
Authorised Signature .....

DOWNTIME

Watering place

THOSE who have sent off hard-earned pennies for one of Uncle Clive's little marvels might like to know what he is doing with the cash. Well, £750,000 has just been spent on shiny new premises (and I *mean* shiny – they're covered with stainless steel) in Cambridge.

The building was a mineral water factory in Victorian times, and is built on top of a well which supplies water at a constant 12 degrees Centigrade all year round.

Handy for tepid cups of tea and cold showers, but not much else, you'd think, unless Sinclair's next move is into mineral water production.

But Cambridge's most famous logger has applied to a high tech solution to the problem of what to do with the warm water beneath him. The roof now sports solar panels, and electric and gas heating are all available under the control of a microprocessor.

Sinclair takes a shine to Cambridge.

The marvellous micro decides which heat source is the cheapest and most energy-efficient, and also controls the lighting.

Rumours that Sinclair staff have been equipped with umbrellas, torches, and wellington boots are greatly exaggerated.

Blame it on computer!

I SHOULD have recognised the smell of million-pound gas bills when I first encountered the Serpell report's suggestion that 85 per cent of British Rail's network might be chopped, but it was not until last week that I discovered that the whole thing had been drawn up with a computer model.

Computer models have never been the most wonderful of devices. They carry the weight of authority due to the layman's naive belief that computers are infallible and are not subject to human frailty.

And so it is that the main recommendation in the Serpell report is that BR's losses will be minimised if it doesn't actually have any trains or track to play with.

Trouble is, a million pound gas bill is obviously a mistake, no one is likely to pay it.

But a government report . . .

And it tastes just like card

WHO said card readers were dead? We probably did, but at least one new application has recently been brought to my notice. A major food manufacturer has set up a system to evaluate its products.

Twenty food tasters sample the major food and tick boxes on cards to record their opinions. The cards are in turn eaten by a card reader, whose opinion is passed to a microcomputer, which presumably then calculates which is the least repellant product.

Given the stomach-turning awfulness of most of the food produced by such companies, it seems to me that the card readers have the best part of the deal.

Out of action

COMPUTER journalists depend on but two things: alcoholic beverages (oh that makes three), typewriters and telephones. The first of these is self-explanatory; the second is used for the vital business of creative writing, or the filling in of expenses forms as it is known in the industry; and the third for the arrangement of rendezvous with interesting and influential people who will ply us with our first requirement.

Imagine then the gasps of horror when the IPC computerised switchboard was out of action last week for "essential computer maintenance".

Technology may be marvellous, but in the old days if Muriel on the switchboard had to go to the doctor someone else could be prevailed into putting the jack plugs into the sockets on the old steam-powered exchange, thus saving journalists from the grisly spectre of an empty diary – and worse, an empty glass.

Chad

10 YEARS AGO

FROM COMPUTER WEEKLY OF MARCH 22, 1973: The IBM 370/115 was introduced, but only in the US and Canada . . . Three major companies offering computer support services merged – to form Computer World Trade . . . . . A Lamsac report stated that ICL had almost three times as many local government contracts as its nearest rival, but still less than 50% of the total.

Liveware File

by Don

MSC boosts DP training schemes

ONLY one thing is more expensive than training your programmers – and that is not training them. The Manpower Services Commission, in honour of this Wildean adage, has generously extended its computer training grants to cover more than just the basics. Now courses in small business systems, real time programming, online applications and systems analysis are eligible for support of up to £100 a week for each person.

None of the five basic training methods is excluded from the MSC's generous embrace. Deltek courses involving a mixture of programmer instruction texts and video-based training courses are covered. So are Control Data's Plato computer-based courses. And of course the traditional lectures as given by Altergo, Data Training, Hoskyns and others are eligible.

Those are four types of instruction. The fifth, on-the-job training, is favoured only for project work that can be done at a trainee's desk. But according to Gordon Ewan, training executive at Cosit, the Computing Services Industry Training Council, any course is eligible for support so long as it brings the trainee to the specified standard. In the case of systems analysis, for example, it must reach the National Computing Centre standard in systems analysis and design.

To get a grant, you apply to the MSC before the start of the course. If the course is provided by one of the training companies, it has to be one that has already been approved by the MSC. If the course is your own, then you have to register it with the MSC first for approval, just as the training companies do.

"Many companies can get their own scheme approved," says Ewan. But government bodies are not normally eligible, because they have other sources of support. The Inland Revenue was not eligible for support when it hired Data Training to convert its programmers for the imminent change from ICL to IBM hardware for internal payroll at Worthing.

Savings on the longer basic courses are especially dramatic, since their cost per person week is less to start with. Altergo's 12-week on-site foundation course in IBM programming comes down from £1,590 to just £390 with the £100 a week support. Data Training's five-week IBM Cobol course comes down from £1,205 to £705.

The extension of MSC grants benefits particularly companies like Hoskyns and Altergo that provide more advanced training courses. Altergo now has 16 courses covered, compared with three before, and Hoskyns has all 24 of its programming and systems courses eligible compared with just the basic systems course under the old MSC scheme.

Savings on the more advanced courses are less dramatic because the cost per person per day is greater. Altergo's four-day course in IBM CICS comes down from £450 to £370 for example. Most of Hoskyn's upmarket courses cost £440 per week, or £340 with the MSC grant.

The training can also be given by public colleges, and the MSC keeps a register of all approved courses, public and private. Subjects covered come under four headings: Computer Programming, Real Time Programming, Small Business Systems and Systems Analysis. In the case of the Small Business Systems, the maximum period of grant aid is 20 days.

Most of the training companies are delighted about the MSC extension, which brings more of their courses within the reach of those on a tight budget.

But Data Training is not so happy, because it believes more of the MSC gold will be diverted into sophisticated courses in computer aided design and real time, to the neglect of the fundamental courses.

Cosit's Ewan agrees that demand for MSC grants has risen sharply, partly because of there being more courses eligible, and partly because of more publicity for the basic grants.

EWAN . . . Demand for grants has risen sharply.

McBRIDE . . . Had his accident occurred in 1985, he might not have been rescued.

Sailor is saved by a satellite

YACHTSMAN Richard McBride owed his life to a weather satellite when his schooner ran aground in East Falkland earlier this month during a race round the world. Each boat in the race had a small saucer-shaped transmitter passing information to a weather satellite run by the French Space Agency and the American Weather Agency.

It was through this device that McBride was tracked down. Yet had his accident occurred in 1985, it is possible he would not have been rescued since several of the world's weather satellites by then will no longer be operating.

Europe's two Meteosats, without which BBC television weather forecasts would be no more than squiggly lines, will run out of fuel in the next year or two.

And the US is threatening to withdraw one of its two polar-orbiting weather satellites as an economy measure. This would mean observations would only be made twice a day instead of four times, after the two Meteosats stop transmitting data as well.

Africa and tropical oceans would suffer particularly badly because there are few ground-based systems there.

All this is happening because the US and Europe are still not convinced that satellites are worth their enormous cost. There is no doubt that short-term weather forecasts have improved because the satellites' ability to detect weather systems forming in areas not covered by conventional observations.

But the information they relay is much less accurate than that obtained from old-hat thermometers and rain gauges, and needs careful calibration and extensive computer processing to render it usable.

PEOPLE

Lane

Dugdale

Heading expansion

CENTRONICS has appointed two managers to head the planned expansion of its UK subsidiary. The team will be based at the company's recently-enlarged headquarters in Kensington, London.

Len Lane has been appointed general manager of Centronics UK. He has held a number of senior sales and management positions in companies such as Elliott, ICL, Redifon and Olivetti. He was Olivetti's top salesman in 1975. Just before joining Centronics, Lane was marketing manager at TRW Datacomm. He joined Centronics at the end of 1981 as International sales manager for Europe, the Middle East and Africa and was later promoted to director of field operations, Europe.

Andy Dugdale has been named manager, distribution operations (UK). He began his career as an avionics technician in the Army and later became a systems engineer at ICL. He later moved to Bytech as a salesman.

■ **David Harper** has joined the board of RTZ Software Services. He was formerly with ICL for 21 years, latterly in managerial posts at Dataskil's transition services and applications systems division.

■ **Vincent Carlin** has been appointed senior programmer/analyst with Computer Management Services. He has spent the past year doing contract work for Quincy in Massachusetts.

■ **Nixdorf** has appointed **Herman Valk** as general manager of its UK operations. He was previously Nixdorf Computer's deputy general manager.

■ **Hertz** has appointed **Terry Fearn** as manager, pan-European systems development. He was previously systems analyst at Fiat Auto.

■ **Lesley Fraser** and **Clive Philipps** have formed a computer personnel recruitment company called Fraser Philipps Associates.

■ **Colin Lewin** (above) has been appointed managing director of Power Equipment, where he was formerly general manager and financial director. A Halma Security Division subsidiary, Power Equipment manufactures and markets acoustic covers for office equipment, and anti-glare filters for VDUs.

■ **Dianes Sparkes** (above) has been appointed saleswoman/demonstrator at Business Electronics in Southampton. She will assist with demonstrations and training programmes on all types of microcomputers at the company's showrooms as well as at exhibitions and on customers' premises. She was formerly a secretary.

■ **Convergent Technologies** has appointed **Kevin Bushby** (above) as technical support manager for the UK. He was formerly with Hewlett-Packard and ICL.

■ **Microfin Systems**, manufacturer of portable data terminals, has made four management and technical support appointments. **John Rodger** has been appointed UK sales and marketing manager. His career in data processing has included senior marketing posts with Hazeltine and ISS. **Trevor Trotman** becomes sales executive, for sales in West England and Wales. He was previously with Memorex. **Thomas Wood**, who joins the company from Oceanic as a programmer, was formerly with Minnie Business systems.

■ Three field engineers have been appointed at **Exxon Office Systems**. **William MacNeil** was formerly an avionics engineer with Airwork, with which he worked in the Middle East. **Keith North** was previously in the RAF and **Ray Crossman** joins the company from British Airways, where he was in computer maintenance. **Stephen Turner**, a former NCR account manager, has joined Exxon as sales representative for Kent and London Sout-east.

■ Electronic systems manufacturer Mastiff has expanded its UK operation. Six new sales regions have been created under the control of UK marketing and sales manager **Peter Grayson**. Managers appointed to the new regions are: **Norman Pattie** (North-west and Scotland); **Gordon Baron Davies** (Northern); **Bill Loryman** (Midlands); **George Carron** (Central); **Barry Deadman** (Eastern); and **Tony Wright**, who has been appointed sales executive for the Southern region.

■ **Mike Davies** has been named managing director of Data Card International. He was previously managing director and chief executive of Wescode.

■ International Data Automation has announced the latest addition to its sales team. **John Harris** was previously in the production, control, technical and sales departments of a multinational company.

■ **Bob Kelly** (above) has joined Compucorp as dealer manager. He previously held a similar position with CPT.

■ **Lesley Sprigs** has been appointed account director at Wickes Associates International. She joined the company in 1980 as a trainee writer and was recently account executive.

■ **Graham Porter** has been appointed dealer support manager at Micro-Simplex. He was formerly an area sales manager at Walls.

■ **John Rapson** has joined Eurocom Computer Services as a senior sales consultant. He was previously with Package Programs where he was also in sales.

■ Counting House Computer Systems has appointed two sales executives, **David Hillman** and **Robert Tribe**, to cover the North of England and Scotland. Hillman was previously with Goodwin Engineering and Tribe joins from Dean, Smith and Grace, where he was in computer assisted programming.

■ **Graham Hardy** has joined Information Management Techniques as telecommunications consultant. He was formerly communications controller for Freight Computer Services.

■ **Paul Smith** has been appointed systems and data processing manager of Seven-Up Bottling Company in Lagos, Nigeria. He was previously computer manager with Unigate Dairies in Bristol.

■ **Peter Smith** has been appointed Scottish area sales manager for the access control security division of Tann Synchrome. He was previously based at the firm's London office.

DIARY

APRIL 6

Mix and Match – the plug compatible jungle. IDPM Central London branch. Altergo, Imperial House, 15-19 Kingsway, London WC2. 6.00.

Branch AGM and presentation on the social implications of the new technologies. IDPM Sussex branch. Room G27, Mithras House, Brighton Polytechnic, Brighton. 7.00.

APRIL 11

Wine tasting and AGM. IDPM Norfolk branch. Castle Hotel, Castle Meadow, Norwich. 7.30.

Prestel's gateway to the world – a practical demonstration of the latest developments in Prestel by Granada TV Rental. IDPM Scottish branch. Lloyds & Scottish, Orchard Brae, Edinburgh 4. 7.30.

APRIL 12

Visit to air traffic control centre. IDPM West London to Oxford branch. Numbers are limited, so phone Maren Talbot on 01-380 8087 to book. Air Traffic Control Centre, West Drayton. 7.30.

APRIL 13

Robotics. IDPM Birmingham branch. New Imperial Hotel, Temple Street, Birmingham. 7.30.

APRIL 19

The past, present and future of word processing. BCS WP and Office Automation Specialist Group. Prudential Assurance, 142 Holborn Bars, London EC1. 5.30.

CONFERENCES

■ ACORN COMPUTERS is to host an exhibition in August with the emphasis on family and educational computing. Organised by Computer Marketplace in conjunction with Acorn and Acorn User magazine, the show takes place at the Cunard International Hotel, Hammersmith, London from August 25-28. Acorn, with some of its largest suppliers and dealers, will show all the latest products including printers, discs, second processors, software and the BBC Buggy. The Acorn Electron is making its debut. Details on 01-930 1612.

■ A HANDS-ON microcomputer workshop for sales and marketing executives is one of several new courses featured in the College of Marketing's 1983 training programme. The course aims to familiarise sales and marketing executives and microcomputers and to show their uses in sales and marketing. The course is residential and fees are £180+VAT for members of the Institute of Marketing, and £200+VAT for non-members. It is being held on July 7-8 and again on November 10-11. Details from Lyn Adams on (06285) 24922.

Dongle will cut down pirating 'by 99%'

A DONGLE only gives software protection as good as the programmer. True of all dongles perhaps, but Hull-based Amidas has gone close to adopting it as a slogan for its software protection device.

"The actual usefulness is up to the ingenuity of the programmer," says Clive Waddington, a doctor of physics at Hull University, who helped develop the little software lock.

The Asp belongs to the dongle family, small bags of chips that contain number sequences that have to be read by the programs being protected. Only when the specified number sequence is detected will the program run.

Asp has a sequence of 32 digits, a hexadecimal number for synchronising with the number passed from the program, and then decimal numbers. The program to be protected has to include a small subroutine to read the number in the Asp.

This subroutine is programmed to abort the whole run if the correct number is not found.

But one little nicety to cope with the inevitable read error that might crop up to make the program think that the correct number has not been found when it has – the subroutine should be written so that the computer cycles until the sequence has been read several times.

The big advantage of the Asp over other dongles is that it does not require its own external power source, according to Waddinton. It works like an adaptor, and does not need its own socket. It is available for most microcomputers using the RS232 convention.

Waddington admits that his dongle is not foolproof. "You will get clever dicks cracking it in universities, but so what?" he asks rhetorically. But it will cut out 99% of the pirating.

Dismantling the Asp is useless, because the memory is automatically erased, says Waddington. There is further protection, as with other dongles, in the copyright and patent.

Two happy users of the Asp are Shieldworth of Hull, which uses it to protect a video library, and Moneymate of London, which protects financial modelling software with it. "It is very compact and has the right amount of intelligence," says Michael Ingham of Moneymate.

Asps are being offered at discount to software houses. Prices vary from £5 to £50.

". . . and fermentation is computer-controlled by a pigsty little microchip from the Southern slopes of Silicon Valley."

Ion-ing out office problems

MAKERS of Ionisers list better concentration, less staff absenteeism and fewer headaches among the benefits to users of their hardwares. One manufacturer, whose client list includes the BBC, British Telecom and IPC, is Medion of Oxted Surrey.

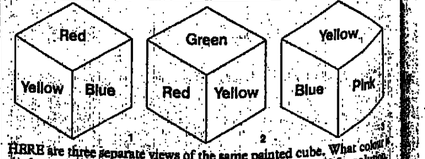
Medion has some astonishing claims to make. At the Cheshire Home for Retarded Children, there was, says the company, a dramatic decrease in the number of colds spread through the wards following installation of one of its Ionisers.

The argument is that positive ions, or positively charged air molecules, are bad for our health. Negative ions are good, but tend to be neutralised rapidly in offices by the positive charge carried by nylon carpets and VDU screens. They therefore must be replenished by nature – or Medion.

Do you believe in this loo business? Drop Workplace a line, because we are curious to know.

Workplace is compiled by Philip Hunter.

PUZZLER



HERE are three separate views of the same painted cube. What colour is the face directly opposite Yellow, in diagram 1? See page 53 for solution.

FOUR NEW MICROS, TEN COMPUTER LANGUAGES

-ALL IN THE APRIL ISSUE

This month, we're testing a parade of brand-new micros—the £99.95 Oric 1, the Apple IIe, the Olivetti M20 and the latest British business micro, the Cifer Series 1. In the same issue, we're looking at the ten top computer languages, probing the strengths and weaknesses of APL, Cobol, Forth, Lisp, Logo, Prolog and more. Also: a beginner's guide to the Spectrum machine code—and that's just a sample of Britain's best personal computer magazine.

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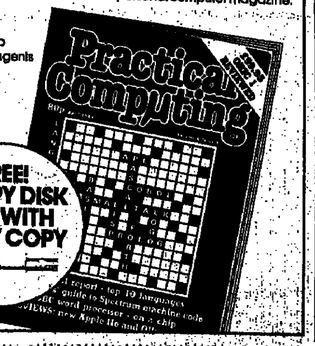

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JAPAN

'A land where no one expects a fair contest'

Kevin Cahill recently returned from a visit to Japan . . . This is his first report

THE US House of Representatives recently heard a chorus of complaints, led by Motorola executive vice-president Stephen Levy, of unfair competition and business practices in the high technology market in Japan.

Levy said Japan was "targeting" specific high technology industries such as computers, semiconductors and communications equipment. He added that US companies such as Motorola could easily cope with this competition in the international marketplace, but in a market such as Japan "nobody could expect fair competition".

The specific complaints made by Levy and other members of the US Semiconductor Industry Association were that Japan provides full protection for infant industries, gradually reduces import tariffs with the development of those industries, and finally floods foreign markets with their products enjoying an internationally competitive edge.

In the course of the House of Representatives hearings, few of the US electronics manufacturers gave more detailed evidence of the problems they encountered in Japan. But one of the most widely licensed microprocessor chips being built in Japan is the Motorola 68000.

The chip, now an industry standard for microprocessors, is widely installed in micros like Sord's new 343 16-bit multi-purpose desk-top machine.

Additionally, many Japanese micros use Z80 chips, again of US origin, and the Intel 8086 and other chips in that family, are licensed and built by companies such as NEC.

The House of Representatives' hearings followed a report last month from the Semiconductor Industries Association which laid out the charges in more detail.

Both the public hearing and the report brought sharp retorts from Japan. The Electronics Industries Association of Japan described the SIA report as "crowded with statistical hyperbole, factual misrepresentations and pettifogging detail".

The Japanese assert that the US achieved its pinnacle in national industrial and technology development by resorting to a "pervasive system of tariffs and government intervention and subvention to protect and promote basic industries."

The Japanese did not specify the "Buy American" Act which recently led to trade friction between the UK and the US, but in private officials at MITI, the Japanese Ministry of International Trade and Industry, say that the US government is leaving the front end of the fight with Japan to the trade associations and the companies because the US government could not risk sustained scrutiny of its own tariff and trade barriers.

Under the "Buy America" Act, restrictions on sales of non-US manufactured products to agencies like the US Post Office, and the Departments of Defence, Transport and Energy mean that more than half of the US market is excluded from accepting foreign products.

Another complaint widely voiced by senior executives in the Japanese computer industry is the unwillingness of US companies to take the elementary step of promoting and marketing their products in the Japanese language.

Japan has implied that IBM is improperly using Japanese technology in testing these chips for its 3081 mainframe.

Japan warns IBM

JAPAN has finally gone on the offensive against the US high technology industry by warning IBM that it is infringing patents issued to a Japanese government agency.

The warning, about the use of an electron beam integrated circuit testing device which is patented in both the US and Japan by MITI, the Ministry of International Trade and Industry's electro-technical laboratory at Tsukuba, near Tokyo, was also issued to Toshiba, a leading Japanese chip maker.

According to a statement issued by MITI, the device is a no-contact method of testing large scale and very large scale integrated circuits to determine whether the very fine lines in the chips, currently being laid down less than 3 microns apart, are working.

The patents for the device were issued as long ago as 1970 and 1976, but the device has recently become more important as manufacturers try to get sub-micron level chips into production.

According to MITI, Toshiba was using the process to test its very fast 64K and 256K dynamic RAM chips. So far Toshiba has made no response to MITI.

IBM says that it looched at the technology but never used it for testing the LSI chips in the 308 as MITI alleges.

Although MITI is unlikely to proceed with court action against IBM – the evidence it has is relatively indirect, consisting of a short extract from an IBM research document – most Japanese commentators see the move as a warning that Japan will look much more closely at the activities of foreign companies in the future.

Robot industry runs out of steam

by Philip Hunter

THE Japanese robot industry has hit a trough as the market for the current standalone units becomes saturated.

Traditional users like the car makers mostly have all the robots they need for static jobs like spot-welding.

Meanwhile the race is on to develop the next generation of robots to re-whet the appetite of the car industry and attract fresh users. These robots will be capable of more difficult tasks such as welding on whole body panels in the car industry, with the robot arm following a programmed path.

There is also emphasis on integration of robots into the production process rather than having them perform one-off tasks.

IBM is working on a range of robots that will be capable of being programmed to do more complex tasks than present machines.

To meet the American challenge, some of the Japanese companies are clubbing together for research and development of robots. The mergers are usually between electronics specialists and companies experienced in mechanics. One such tie-up was made recently between electronics specialist NEC and robot builder Daiichikiko, with leading Japanese trading house Sumitomo lending a helpful marketing hand.

Daiichikiko, in common with most other Japanese robot manufacturers, has seen disappointing sales recently, and is only operating at 70% capacity.

Falls of 20 to 30% in robot production seem common. Kobe Steel, maker of robots to spray car bodies, expects to produce 200 robots this financial year, 50 below target. And robotics trading company Moto Kogyo this year expects a 25% drop in sales from last year.

The Japanese robot industry may be slowing down, but there are too many robots already for the liking of the unions, some of which have expressed concern that jobs may be irreversibly changed, if not lost. But typical of the excellent industrial relations that Japan enjoys, the companies are mostly declaring openly the same concern about jobs.

One company, Nissan, has put its concern to paper and pledged its house union that workers will not be demoted, suffer wage cuts or suffer worse employment conditions as a result of robots. The accord also requires management to provide workers with proper training before putting them in new jobs – and to consult with unions, before bringing in any more robots.

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JAPAN

Staying in line with IBM is the only way to win

by Kevin Cahill

IF there is one place in the world where the old cliche "If you can't beat 'em join 'em" applies, it is Japan. At issue is IBM.

To the Japanese IBM, even more than the current crop of Japan's American critics, is the enemy. But the way of beating IBM is to make products compatible with its computer systems.

"Enemy" was the word used by Shiro Yoshigaway, a senior executive with Fujitsu, last year. And in one of the more controversial interviews given by a company chairman, Fujitsu's Daisuke Kobayashi described IBM as the "Gulliver company". Kobayashi, speaking to a reporter from a Japanese newspaper, said the Japanese computer industry, which started from scratch in the early 1950s, had had a real struggle to get where it is today.

The interview with Kobayashi has not been widely reported in the West (it was printed in Japanese), and a number of extracts are included in this article.

Fujitsu has recently managed to squeeze IBM out of its slot as Japan's largest computer company.

The position of number one is particularly important in Japan. Many local commentators say that IBM might have pushed Fujitsu back to number two last year if the backlash from the Hitachi "tring" in California had not cost IBM a substantial number of orders in Japan.

Kobayashi has often described IBM as Fujitsu's arch rival, and in his view a case such as the one in which IBM helped the FBI against Hitachi was bound to happen.

He did not explain fully in the interview why he thought IBM had selected Hitachi, but he did say that his company relied on Amdahl Corp in the US to keep Fujitsu abreast of what was necessary to achieve full compatibility with IBM. Kobayashi said he had warned many people that the ending of the anti-trust suit against IBM meant that the company would go on the offensive, and would be "very dangerous". In a somewhat joking fashion Kobayashi said that with the ending of the anti-trust case, 300 or 400 IBM lawyers "have nothing to do".

"The lawyers have been so to speak, laid off. Therefore they must be preparing a surprise for us," said Kobayashi.

He added that he didn't know what and how Amdahl is doing in the US. "Even if Amdahl was arrested and investigated, there would be absolutely no way at all to connect that to Fijitsu."

Having described how Fujitsu avoids the problems of the close pursuit of IBM, Kobayashi gave a brief insight into why the Japanese companies have, with the exception of NEC and Oki data, gone for a strategy of IBM compatibility. And NEC is posed to make the move.

"When we developed a computer that was practical and began to market it with every effort, we realised that it was not good enough after all," said Kobayashi. "In the market that we were trying to sell our products in, IBM, the established 'Gulliver enterprise', had dominated the market and it was a matter of how much of a share we got from IBM that determined whether we would be successful or not. Needless to say, IBM users use IBM software. Further, in many universities they use IBM manuals as text books. In particular, because it is very significant in overseas countries, we realised that was very bad."

At the time that Fujitsu made the decision to switch to an IBM-compatible strategy, Kobayashi was its managing director. He discovered early on and at first hand the near impossible task the company had set itself and began a frantic search for more information about the IBM architecture.

At about this time Gene Amdahl, the architect of IBM's 360 machine, and by definition the man who imposed the idea of compatibility on IBM itself, had left the company and set up Amdahl Corp (1970).

> **'There is widespread speculation in Japan that NEC is preparing to go IBM-compatible in a way which will be a major blow for Fujitsu and Hitachi'**

Through a mutual friend Kobayashi was put in touch with Gene Amdahl and thus began a link between Japan's number one computer company and Amdahl, the first of the plug compatibles, which remains unbroken to this day.

Fujitsu started with a 20 per cent investment in Amdahl and a technology agreement to collaborate on the design of a major new IBM-compatible range of computers – a range in which Hitachi shared the technology and design until recently.

Fujitsu has since raised its stake in Amdahl to 30 per cent, and its purchase from Amdahl of a new technique for bonding chips in the last quarter of last year did much to stabilise the US company's slightly battered accounts for the period.

Kobayashi did not say in his interview that Fujitsu was extremely upset when Gene Amdahl left Amdahl in 1980.

One of the Fujitsu staff described the situation as a design crisis, and because Hitachi collaborated with Fujitsu in the M range of mainframes, Amdahl's departure launched Hitachi on what one official described as "the search for a genius".

Sadly for Hitachi, it attempted to resolve part of the ensuing crisis by getting involved with a consultancy in California which eventually betrayed to IBM the fact that its client, Hitachi, had somehow obtained the workbooks for IBM's 3081 series.

In another case IBM is suing the newest entrant to the compatible stakes, Mitsubishi, for stealing its secrets.

Although the Hitachi and Fujitsu computer ranges are now beginning to diverge, particularly at the top, both the existing mid-range products still come from the joint range largely developed by Fujitsu with the aid of Gene Amdahl.

With Fujitsu and Hitachi from the first declared IBM-compatible suppliers, Mitsubishi joined the IBM bandwagon in 1980, when it told a Computer Weekly correspondent that it would produce a dual processor mid-range machine in 1982.

Marketing of the Mitsubishi machine started earlier this year, and by all accounts the product has had a good reception.

Called the Cosmo, the main machine range runs on bi-polar emitter coupled logic, the preferred semiconductor technology for all the plug compatible suppliers. According to Hideo Ohta, a director and deputy general manager of the Electronics Products and Systems division of Mitsubishi Electric Corp, the Japanese definition of what IBM-compatible means is different from the meaning of the term in either Europe or the US.

Traditionally the definition of IBM-compatible, usually plug compatible, has meant that the hardware is delivered naked to the customer and runs the IBM operating system.

As well as being able to run the IBM operating system MVS, the Mitsubishi operating system is also able to run any application software written to run on IBM machines.

Fujitsu, like Mitsubishi, offers its IBM compatible machinery complete with an independent operating system, OS/4F.

Users say that Fujitsu's OS/4 is better than the MVS supplied by IBM and offers a richer instruction set, though this cannot always be used on existing software.

Apart from Oki Electric (a special case of a primarily electronics company acting in an OEM capacity to Sperry Univac), NEC, the third ranking Japanese computer maker, is conspicuous by its lone stand as a non-compatible supplier.

However, there is widespread speculation in Japan that NEC is preparing to go IBM compatible in a way which promises to be a major blow for both Fujitsu and Hitachi.

The speculation centres around the deal late last year whereby Sumitomo, a major Japanese trading group with no previous computer experience, signed up with Trilogy, Gene Amdahl's new computer company.

No adequate explanation was offered for the deal other than the fact that Sumitomo has vast financial muscle and would, with its hundreds of operating companies, constitute a major market in itself.

One of those operating companies is NEC Corporation, a company designated by Sumitomo to spearhead the group's automation in the 1980s.

NEC has a huge mainframe system, the Acos 1000, and it seems unlikely that the parent group would deliberately bring in an outside company as a competitor.

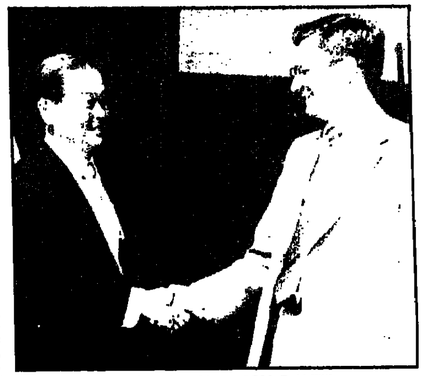
The most likely course of events is that NEC, perceiving the break between Amdahl Corp and Gene Amdahl, itself stepped in to suggest the deal. With traditional Japanese subtlety NEC seems to have "passed" the deal through its parent in order to disguise its intention of going compatible.

There is more at stake than simply the company's decision to go compatible. The real coup, according to those close enough to NEC to know, is the capture of Gene Amdahl's design genius for the corporation.

To know why this is seen as such a coup, it is necessary to know with what esteem Gene Amdahl is held in Japan.

In the shrine dedicated to Dr Icheda, Fujitsu's greatest designer, at the top of the company's major computer factory in Numazu on the slopes of Mount Fujji, a conspicious item in the shrine is the correspondence between Icheda and Amdahl.

Armed with access to the Trilogy machines, which are expected to have an operating speed of between 30 and 50 million instructions per second in the uniprocessor version, NEC will have a head start position over both Fujitsu and Hitachi.



Fujitsu chairman Daisuke Kobayashi meets ICL's Robb Wilmot.

AMDAHL . . . Held in huge esteem by the Japanese.

JAPAN'S MAJOR COMPUTER COMPANIES
1981 revenues in $100,000s

Fujitsu	1,974	Fully IBM compatible.
IBM Japan	1,865	
NEC	1,424	Expected to go compatible.
Hitachi	1,252	Fully IBM compatible.
Oki data	474	Non-compatible.
Toshiba	437	" (no mainframe).
Nippon Univac	395	Non-compatible.
Mitsubishi	391	Dual running with compatibility.
Burroughs Japan	249	Non-compatible.
NCR Japan	216	"

OHTA . . . IBM-compatibility in Japan is not the same as in Europe

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Honeywell chairman Ed Spencer addressed an Electronic Industries Association meeting early this year on the issues affecting US and Japan trade. His remarks also have a message for the European market, and an extract from his text is reproduced on these two pages.

How the West can compete

THERE is a great deal of emotion surrounding America's trade balance – understandably, what with high levels of unemployment and a modern and aggressive Japanese industrial establishment targeting other industrial markets for Japanese exports.

European markets are feeling some of the same pressures. Japan herself has a few non-competitive and declining industries threatened with foreign imports, but for many reasons is better able to cope with restructuring than are other nations.

This is not a propitious moment for the multilateral trading system that has contributed so much to economic growth and prosperity since World War II. The alternative of returning to the protectionist world of the Smoot Hawley tariff era of the 1930s is not a viable choice. The first major country to expand broadly into protective measures is sure to be met with retaliation by its trading partners.

A spiralling down of world trade is all too likely to occur, unless those of us who believe in the benefits of the free trading system are willing to work hard to preserve it from the attacks of industries that suffer from imports taking over their markets and from legislators who quite naturally respond to the pressures of their voters, particularly when unemployment is a major problem.

Japanese industry and the Japanese must become more sensitive to the unemployment problems a surge of Japanese exports can create in other countries. The problem, however, lies within our own grasp to solve, and some suggestions will be presented of measures industry and government together can take to strengthen international competitiveness.

First, let us consider the Japanese balance of payments.

Japan has to export to survive. It is the second-largest internal market in the world, but that market is heavily dependent on imported food and almost entirely on imported raw materials and imported energy sources to survive. About 30% of Japan's industrial production is exported and about 25% of these exports go to the US. The reciprocal of this is that Japan is America's second largest export market, after Canada, and its largest agricultural customer. In fact, about 30% of US exports to Japan are farm products.

Chart I on the facing page shows that Japan's total worldwide merchandise balance has been negative for five of the last nine years and that petroleum and other energy products as a percent of total imports have risen from the 20% range before the OPEC price increase in 1974 to 50% of the value of imports today. Energy and agricultural products combined now account for over 60% of Japan's imports.

Chart 2 shows that Japan's current account balance was also negative for five years of the last nine. In recent years, a negative balance in services and investment has tended to narrow the more positive merchandise trade balance.

Trade has to be looked at on a multilateral basis since if every country tried to balance with each other on a bilateral basis, it would not only be impossible to accomplish, but world trade would shrink rather than expand. However, the problem with Japan is bilateral, is large and affects industries that are major employers in the US.

The negative merchandise balance for the US relative to Japan was $10 billion in 1980, $16 billion in 1981 and may reach $20 billion in 1982 and again in 1983. The current-account balance tends in recent years to be somewhat less because of positive flows to the United States from services and investment but has still run a deficit for 10 consecutive years.

The flow of direct investment is heavily towards the US at present, but the figures are small relative to merchandise trade.

Lower inflation rates and lower interest rates in Japan, coupled with political and economic stability in the United States, have served to attract massive short-term capital flows to America from Japan and from other countries such as Saudi Arabia that have a positive current-account balance with the US. In the case of Japan this has been the major factor keeping the yen weak and dollar strong.

The conclusions are that if Japan is to have a viable economy, she must export to pay for the imports of raw materials, food and the industrial products her people require. (It should be added that it is decidedly in our interest for Japan to have a strong economy, which in turn underpins a stalwart political friend and a stable democratic political system).

Japanese exports are going to be industrial and hence will be targeted in no small measure at American, Canadian and Common Market countries. And with these countries, Japan is likely to have annual trade surpluses because of the nature of demand for Japanese products in the industrialised West and the difficulty for industrial exporters to penetrate the Japanese market.

Japan will use its trade surpluses to generate foreign exchange to pay for petroleum, coal, agricultural and raw material imports and will invest short and long term in other countries to assure supplies as well as to help preserve export markets.

In the long run, a strong US economy will in turn attract these capital flows from trade and current account surplus nations, such as Japan and the petroleum exporters.

SPENCER . . . The Japanese must be more sensitive to the unemployment problems in other countries.

Obstacles in the path of foreign companies

TO explore the subject of the ease or difficulty of selling in Japan, we should look at the problems of increasing exports to and investments in Japan.

Japan ended World War II with its industry destroyed and capital wiped out. Strong protectionism fostered by the Ministry of International Trade and Industry kept out more competitive American and European products and restricted incoming investment while Japanese industry rebuilt. High debt levels, financed by short-term bank borrowing underwritten by the Ministry of Finance and Bank of Japan, restored the capital base.

In addition to government support of the reindustrialisation of Japan, there are attributes for which Japan is renowned; a dedication to hard work and high productivity; the drive to reduce the pre-war reputation for shoddy quality; a high level of education, particularly in engineering and science; innovative management; a goals-oriented workforce; and good labour-management relations.

Japan, however, kept the protectionist walls up for too long. Tariffs, quotas and other forms of import restrictions have come down gradually, and only after intense pressure and threats of retaliation from Japan's trading partners.

Voluntary export restraints by Japanese industries have generally been implemented after employment levels in US or European industries were threatened or actually declined and political pressure mounted for protection.

Japan would have served her cause as a major beneficiary of a free-trade system that allowed virtually free access to the US market, if concessions had been negotiated in anticipation of the employment dislocation caused by excess exports to other markets, rather than after the dislocation occurred. The examples in textiles, steel, television and, most recently, cars are well documented. A major threat to the US electronics industry is clearly a present danger.

The easing of Japanese trade barriers in May 1982, accompanied by Prime Minister Suzuki's admonition to look favourably on imported products, plus encouraging signs from Prime Minister Nakasone and the tariff reductions announced in December, have gone a long way towards completing the opening of the Japanese market – on paper at least.

Japan has the lowest industrial tariffs of leading industrial nations and instructions have gone out to the Japanese bureaucracy to simplify Customs and testing procedures for imports.

Some progress has been made to increase imports of tobacco products, but more remains to be done to liberalise the sale of imported cigarettes further and to deal with continued protectionism in such products as beef, citrus, leather, aluminium, lumber, soda ash, cosmetics, telecommunications equipment and others. Also, the decline of administrative guidance – a bureaucratic habit in many countries, but particularly so in Japan – which impedes importation has to be seen, and not just to be talked about.

Liberalisation progress is still needed in some service industries.

There is also a lot of machinery in place to resolve trade disputes. The American Chamber of Commerce in Japan and the Japan-US Trade Study Group have made progress on specific issues, as has the inter-governmental Trade Facilitation Committee. The Japanese Office of Trade Ombudsman, OTO, in the Prime Minister's office, while needing more enforcement tools, offers importers and investors a direct route to correct bureaucratic impediments.

American businessmen have to learn how to use the OTO effectively, but the intent of the Japanese to make it an effective mechanism to blunt criticism was stated in the Prime Minister's declaration setting up the office.

There is a US-Japan Working Group on High Technology, in which trade officials from both countries discuss impediments on both sides of the Pacific to trade in high technology products. There are two business organisations that have been meeting together since 1961 to discuss and make recommendations to governments on bilateral trade problems – the Japan-US Economic Council in Japan and the Advisory Council on Japan-US Economic Relations in America. There are also a number of other inter-governmental study groups dealing with specific industries.

Regarding "ex-im" trade, the argument can be made that Japan is as open as any industrial market, except the United States, and that the remaining barriers to freedom to import are being reduced. However, a body of study exists that says that simply removing all the remaining legal and administrative barriers would not significantly alter the ability of US com-

■ Turn to page 23

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Ed Spencer on the industry's foreign competition – continued from page 22

The tariff barrier built by Europe

WHILE we have focused mainly on Japanese government support for the electronics and other industries, it should not be forgotten that Europe also protects some of America's electronic competitors.

In Europe the emphasis has fallen more heavily on computers, although in the latter part of the 1970s, the British, French and German governments all found ways to subsidise the semiconductor industry as well.

The German government has directly funded computer R&D by general as well as specific grants to the computer industry. The German government also gave financial assistance for the merger of a bankrupt Telefunken computer business into Siemens.

In the UK there was for years central government preference for computer purchases from ICL. The Thatcher government ended this because of its general policy as well as in response to new EEC rules prohibiting such preferences. ICL has also received major R&D funding from the government as well as loans at favourable terms, although both are winding down under the present government.

Support by the French governments, past and present, for the computer, semiconductor, communications and for much of the electronics industry goes far beyond anything attempted in Germany or the UK – or in Japan for that matter.

Socialist nationalisation of all the major players in the electronics industry is the end-point in a game that began when de Gaulle established government-owned CII in 1964 – a computer company set up in response to General Electric's takeover of Machines Bull, plus the US government's denial of the export licence for a large computer ordered by the French atomic energy agency.

Over the years LM Ericsson and ITT have been forced out of the communications business in France, Honeywell out of the computer business there, and some US semiconductor companies have been forced into minority positions in joint ventures. In addition, we have seen strong government preference for buying French, R&D subsidies, low-cost loans, and now directed investment from the government-owned banks.

But the subject is Japan not Europe and these are some very important differences between Japanese and US financial systems – differences that have a substantial impact on our ability to compete with Japanese industry.

A number of the least understood but most important advantages enjoyed by Japanese industry in comparison with American industry are in capital markets and financial measurements.

First is the highest savings rate among industrial countries, making available a relatively larger pool of capital for investment.

Second, borrowing for consumption, including housing, is discouraged, with government lending sources primarily channelling funds to industry. This is in contrast to the US, where mortgage and consumer-credit markets are more developed, and government underwrites housing loans.

Third, Japanese companies tend to be much more highly leveraged than American and, to some extent, European companies.

Fourth, return on shareholder's equity and quarterly and annual earnings results are of less concern than in the US in measuring corporate performance.

The net result of these financial differences is that Japanese firms can finance their growth with net profit margins in the 2% range, far below what is required to attract the capital to finance growth for an American company.

These factors, which favour Japanese industry in worldwide competitive markets, are going to change very slowly, if at all. For American industry it is important to understand the financial advantages enjoyed by Japanese competitors, and then to see what can be done on our side to give us a more competitive position.

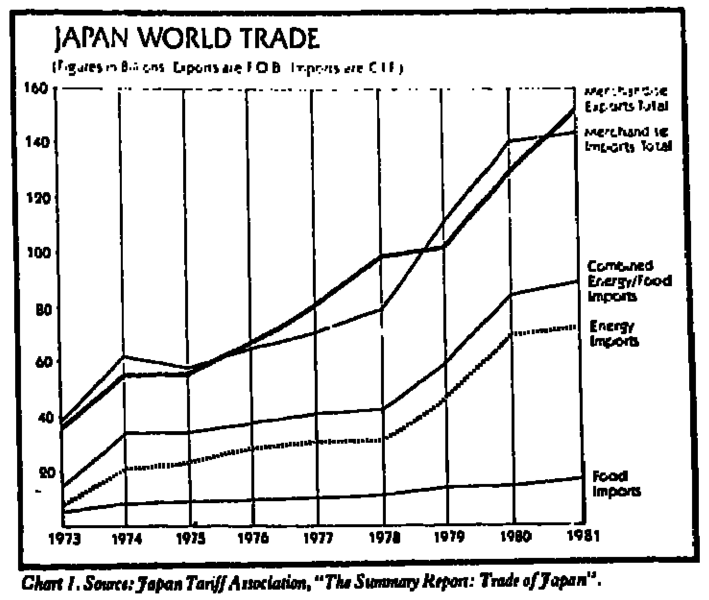

Chart 1. Source: Japan Tariff Association, "The Summary Report: Trade of Japan".

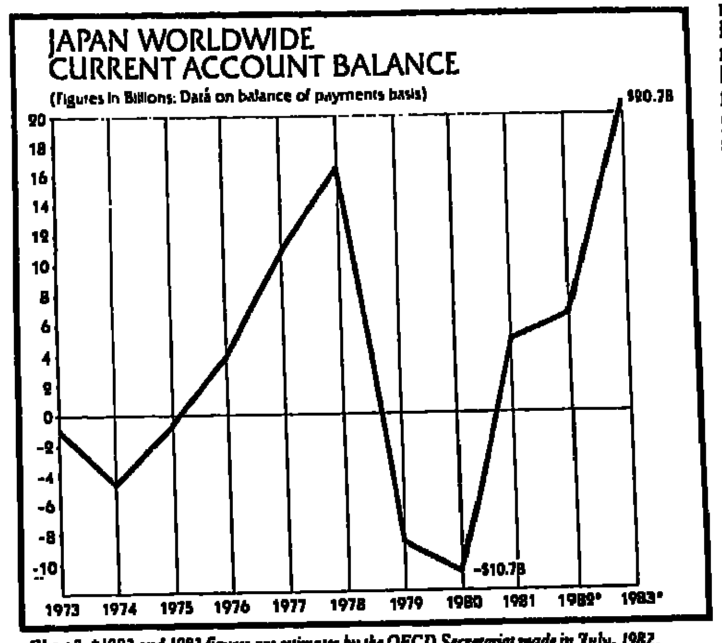

*Chart 2. *1982 and 1983 figures are estimates by the OECD Secretariat made in July, 1982. Source: Bank of Japan, "Balance of Payments Monthly".*

How Japan's advantage is being eroded

A NUMBER of long-term trends in the Japanese economy are working to reduce the comparative advantage enjoyed in export markets by Japan's highly productive industry.

Long-term economic growth is slowing as the Japanese economy matures. The large supply of labourers from the countryside that provide the hands for industrial growth is no longer available; the population is ageing, and all the burdens of supporting it have not yet been faced by the government; the economy is becoming increasingly service oriented; demands for improved housing, public services, roads and medical facilities, plus a rising military expenditure, will all put inflationary strains on the government budget; and Japan is feeling competition from industries that fuelled her economy in the past, but now turn out products at lower costs in Korea, Taiwan, Hong Kong, Singapore, Malaysia, and in the future the People's Republic of China.

Structural changes are at work in Japan that may make it more difficult in the future than in the past for it to have such a competitive advantage in exports. This will particularly be the case if the United States can turn its talents to increasing its own competitiveness.

Japan, however, remains a substantially closed market due to buying habits, not because of regulatory protection. The reason no longer lies in tariffs and import-licence regulations, which were used vigorously to protect Japanese industrial growth for longer than in the case of Europe. In fact, Japanese import of many products is probably freer, and tariffs lower, than in the case of the EEC, and the US as well.

The 1980s will see a shift in Japanese buying habits to parallel the shifts in the US and Europe towards true openness in preference for style, quality, price and performance regardless of the source of the product. But a lot of effort and investment of money and time by American and European companies will be required to tap the very large Japanese domestic market.

A number of factors are changing the nature of the US-Japan trade problem, and probably the net of these changes will work in the favour of the US in the 1980s.

For example, Japan is now a low-tariff country. Imports have been substantially liberalised. The yen is strengthening. The Japanese government is moving to accept more of its international responsibilities. One can only regret that the Japanese negotiating positions required maximum pressure before concessions were made.

On the other hand, there are cultural differences that favour Japan as an industrial exporter and these will not change.

Last but not least, Japan – her government, industry, unions, people – know that success in exporting is essential to maintaining a healthy economy and a rising standard of living.

Stronger yen will help trade balance

THE weakness of the yen, with the corresponding relative strength of the US dollar, is an immediate and major source of advantage to Japan in exporting. At the same time, it results in a higher cost of importing products from the US.

Japan has been accused of managing the exchange rate in a way that keeps the dollar high-priced relative to the yen, but there is little evidence to indicate that this is the intent of Japanese foreign exchange policy. Rather, a weak yen is the result of a number of external and internal factors – many of them systemic – that determine interest and exchange rates.

External factors include the high rates of interest in the US, which have attracted massive short-term capital flows from Japan. This has helped reduce dollar inflows from Japan's huge positive payments balance, but it has also increased the demand for dollars in terms of yen and kept the yen weak.

Perhaps more important over the long run, however, is the conscious insulation of the yen from world interest rate trends. Japan has the highest savings rate in the industrial world, thus making available a large source of capital for investment.

As long as Japanese interest rates remain below those in other leading industrial countries, and as long as government policy isolates Japan from international capital flows, the yen will remain weak. In addition, as long as inflation in Japan remains low, so will interest rates.

As interest rates in the US drop further, the demand for dollars will decline and the dollar should strengthen relative to the yen. The trend is already underway, but it needs encouragement from the Ministry of Finance, including some short-term intervention to strengthen the yen. The Japanese government should also be encouraged to complete the liberalisation of yen borrowing by foreigners.

This strengthening of the yen in terms of dollars will do more to restore a more normal trade balance between the US and Japan than any other short-term measure.

Cultural obstacles that make business difficult for foreign companies

■ From page 22

panies to increase exports to Japan.

Those barriers have been well documented elsewhere, most recently in a report of the US Trade Representative called Japanese Barriers to US Trade. They include quotas on certain products (which are illegal under GATT), two-tiered tariffs, arbitrary use of standards and testing procedures on imports, Custom delays, and labelling regulations. Participation of foreign firms in Japanese government R&D projects is still a difficult area.

The Japanese anti-monopoly law has not been vigorously enforced in the past, and it provides for exemptions that permit the creation of cartels in certain cases. Administrative guidance is also a common practice to encourage informal cartels, which may be prohibited by a strict interpretation of the anti-trust laws. Recent examples are in the soda ash and aluminium-smelting industries, where imports have been restricted, inefficient domestic producers protected from foreign competition, and guidance provided to buy domestic product.

The Houdaille petition is a very detailed study that claims the use of a cartel, aided and abetted by the government of Japan, as the cornerstone of anti-competitive activity to first strengthen a domestic industry, and then help it penetrate foreign markets. Japan has denied violation of Japanese law, and referred to reconstruction measures taken in many countries to restore industries decimated by war.

It appears, however, that the Japanese government may be worried about this legal challenge.

The 1980 foreign exchange law liberalised foreign direct investment in Japan. However, in certain sectors and 11 designated firms, the amount of foreign direct investment is still limited. More important, foreign investors still have to file a detailed notification describing the scope of the investment with the Ministry of Finance, which reviews the investment with other affected ministries.

The government has 30 days and if no action is taken, the investment can proceed.

This is a long step towards liberalisation from the days when every investment required lengthy screening and positive approval, but it still leaves open the opportunity to turn down an investment.

When and if all the remaining legal and administrative barriers are removed, however, there still remain what can be called systemic or cultural obstacles that will make it difficult for foreign companies to do business in Japan. Among these are: A multi-tiered and inefficient distribution system; a tradition against acquisitions; different employer-employee relationships than the US is used to; the tradition of exporting, importing and trading internally through trading companies, which in turn are tied back through banks to groups of operating companies; long, close and not easily changed vendor relationships; and historical distrust of things foreign and a resulting buy-Japanese tradition.

A number of American companies have overcome these cultural differences. They have generally been in Japan a long time, have combined understanding parent-company support with competent Japanese management, and have been patient in waiting for their investments to pay off.

A few examples of American companies in the electronics industry that have succeeded in Japan for many years are IBM, Texas Instruments, Sperry, Burroughs, NCR and Honeywell.

Japanese target-industry programmes are generally accompanied by co-operative R&D programmes than benefit those industries.

Machine tools, textiles, steel, shipbuilding, and automobiles are all industries that benefited from low-cost government development loans, as well as shared R&D contracts with government funding support.

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OPERATING SYSTEMS

A MAJOR computer hardware manufacturer, Gould SEL, has announced that it has implemented the standard Bell Laboratories' version of Unix as an option on its powerful 32-bit range of superminis. It has also become the first 32-bit computer manufacturer to do so in-house. Why did a major international corporation go to the trouble and expense of an in-house development project, when other 32-bit hardware manufacturers have opted to use third party developers? And why did it opt for Unix at all? Simon Gray reports . . .

Unix learns to win friends and influence people

UNIX was devised originally in 1969 as a research tool by the US Bell Laboratories Inc, specifically to run on its own internal DEC DPD 16-bit computer systems. It was subsequently put on to the open market by Bell's parent company, Western Electric, and was first implemented to run on 32-bit systems about five years ago. Unix was designed from the start as a multi-user 16-bit operating system.

One of the most significant advantages of Unix is its high degree of portability. This allows its implementation on a variety of different microprocessors including Intel 8086, Zilog Z8000 and Motorola 6800. Portability was achieved by means of the parallel development by Bell Laboratories of a high level language called C, whose compiler generates a form of semi-compiled code. It makes Unix one of the easiest multi-user operating systems to implement.

This factor was important to Gould SEL when deciding to "do it themselves".

The marketing strategy for Unix was devised by Western Electric. Western decided to sell Unix licences to commercial users at a very high cost, also charging a royalty on each unit. Conversely, Unix was practically given away to educational establishments such as universities.

In fact the commercial user charges for Unix have been reduced in recent years, but in the earlier period the charges were undoubtedly very discouraging to the commercial system developer.

Although tending to discourage commercial user sales of Unix-Western's policy did prove a shrewd investment. US university graduates weaned on Unix, who stayed on to do computer assisted post-graduate research or moved into computer-related employment in government service, naturally had an in-built bias towards Unix-driven systems. Indeed, in the educational sector alone, it is estimated that some 90% of US university computer installations currently use Unix; hence, computer manufacturers who cannot offer Unix have little or no chance of worthwhile sales. Use of Unix in US government departments is also *de rigeur*.

The implementation of Unix on its Vax 32-bit computers undoubtedly helped DEC to carve out a large slice of the supermini market among American universities and government departments. Gould SEL's implementation of a Unix option on its full range of very powerful 32-bit Concept 32 machines, including the latest high speed 32/8780, will now allow Gould to compete very strongly indeed in these valuable US market sectors.

Chris Wilks, new business manager at Gould SEL, said recently: "We see significant new markets coming for Gould in universities and medical electronics, as well as commercial processing. For laboratory applications and general computation, Unix is a strength.

WILKS . . . "We intend to play a very active role."

"People use our MPX-32 operating system for high performance real time applications, but Unix for design and development. The applications can then be cross-loaded to MPX target systems.

"We intend to play a very active role in the Unix university environment."

What advantages does Unix provide for the user?

Unix is a general purpose, multi-user interactive operating system, specifically engineered to make a computing environment simple, efficient, flexible and productive. Gould SEL's implementation of standard Unix operates in dedicated, standalone mode, supporting asynchronous full duplex terminals. It provides facilities to enter and process programs, data and documents, send mail between users, and easily control the software/hardware system.

Figure 1 shows the basic components of the Unix operating system. The Kernel is the vital resident code, on which all else depends. The Kernel executes system calls, maintains the file system, manages resources, and contains all system information.

The Shell is the command language interpreter that interfaces the user with the Kernel. It reads the command lines typed by the user and interprets them as requests to execute programs. After each command execution, a prompt appears to indicate readiness for the next command. The output of a command is sent to a standard output file which is normally assigned to the user's terminal. The Shell can be used to redirect the standard output to another file, or device, instead of the user's terminal, and the facility to redirect input and output can be extended to create a very powerful tool.

Output from one program can serve as input for another, and this facility is called a "pipe".

Unix's file system is arranged as hierarchy of directories and files in the form of an upside down tree, starting with the root director and developing a branching structure. File management and manipulation are achieved via the Shell, and are transparent to the user. The file management system provides additional features such as automatic file space allocation or deallocation, flexible directory and file protection modes. Facilities for creating, accessing, moving and processing files and directories are provided in a uniform way, because each physical I/O device is treated like a file.

I/O devices are all logically synchronous. When a program opens an I/O device, the system brings into execution the proper driver for it. Drivers are currently available on Gould SEL's Unix for removable disc, magnetic tape, upper and lower case printer, and Hazeltine and Televideo terminals.

Unix has a rich set of utility programs, one of the most important being its text exitor, ED. This creates and modifies Ascii files on a line-by-line basis. The Sort command provides a capable and efficient program for sorting and merging files, with a wide range of options and the ability precisely to select key fields to be sorted. A spelling program checks input against a 25,000-word dictionary.

Other utilities include accounting, which publishes cumulative connect time for all or selected users, as well as ... information on each comma... executed.

The flexibility and other features of the Unix system will ... Gould SEL to make significant ... roads into Unix market sectors ... for example, the commercial, ... dustrial and office automa... markets. It will also strengthen Gould SEL's market share in areas of science and engineering where extensive reporting is essential.

However transportable Unix may be, hardware suppliers have almost invariably used "outsiders" for implementing it on their systems. Certainly no other SEL system supplier has done it in-house before. Would it not have been much quicker, and less costly in human resources, to have used a system developer already familiar with Unix?

In fact one of the factors that most impressed Gould's management was its experts' assessment of comparative in-house development times; only 12 months for Unix implementation, plus six to nine months' fine tuning. This compared with a forecast of between three and five years for other operating systems.

But there was another, even more important reason why Gould SEL wanted to use the in-house route. The system experience gained by Gould SEL staff during the implementation would enable the company to provide full, direct support of Unix for Gould SEL users. Other hardware suppliers, who have employed third party Unix implementers, do not offer this direct support. Indeed, some will only offer support for their own hardware.

Like any other system Unix does of course come with its warts, and Gould SEL has devised an intensive programme of enhancements to its first Unix release. Two main problems are usually quoted Unix's unfriendliness to commercial users, and a lack of applications software.

Bell Laboratories' Unix interface to the commercial user has been variously described in the past in terms varying from "painful" to "perhaps the single most limiting factor to commercial sales". Gould SEL therefore has given top priority to the development of a full-screen editor with simple command prompts.

The lack of software is not the problem that it has been made out to be. In fact, quite a large volume of applications software has already been developed to run under Unix, and Gould SEL will develop its own applications packages as and when the need arises.

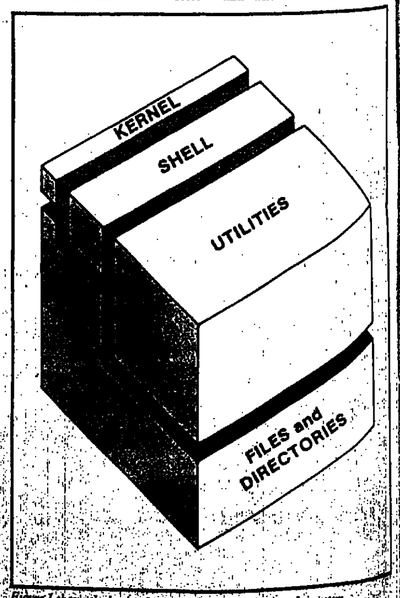

Figure 1 shows the basic components of the Unix operating system.

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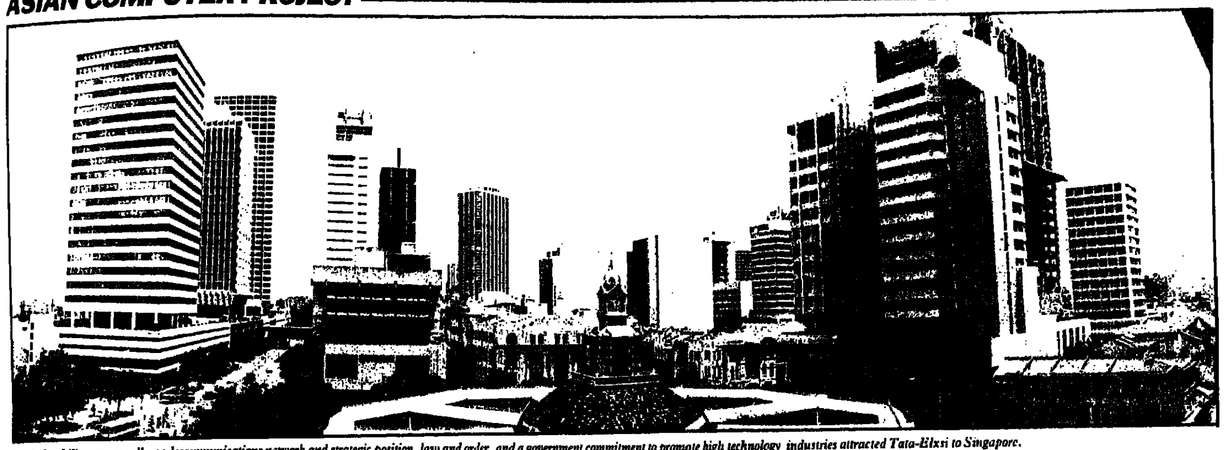
ASIAN COMPUTER PROJECT



Political stability, an excellent telecommunications network and strategic position, law and order, and a government commitment to promote high technology industries attracted Tata-Elxsi to Singapore.

The dragon wakes and aims to shake the world

A Singapore-based computer manufacturer aims to challenge IBM in very large commercial systems, as our special correspondent reports here

SINGAPORE'S quest to rival Japan in the information processing industry took a great leap forward last year with the establishment of Tata-Elxsi, a joint Indian-Californian-Singaporean venture which will be producing the Elxsi System 6400, one of the world's fastest and most modern multiprocessor computers.

Tata-Elxsi and Elxsi, California are unique in that they started as multinational corporations while their product was still in the research and development stage. This is also the first time a high technology product is being introduced in the US and Asia simultaneously, before being marketed in Europe.

Tata-Elxsi has an authorised capital of S$10million – $5 million in US dollars. Elxsi, California, set up a few years ago by scientists and engineers from IBM, DEC, Intersil, Tandem and Hewlett-Packard together with some Stamford University professors, holds a 20% share of the equity while the Singapore government's Temasek Holding Co and the Development Bank of Singapore (DBS) hold 15% and 10% respectively. The balance of 55% is held by the Tata Group, India's foremost industrial conglomerate.

According to Asit Chandmal, managing director of Tata-Elxsi, the Californian company will provide the technology while the Tata Group is seconding technical and managerial personnel from India to run the Singapore company. Tata is also India's largest computer user with a large pool of experienced personnel in software development.

Tata-Elxsi has helped to develop sophisticated software enabling its computer in Singapore to communicate with the Elxsi computers in California. This was essential because software development was simultaneously being done at the two locations while the hardware architecture was being designed and implemented. Chandmal claimed that the prototypes of the computer had been successfully tested at its Santa Clara base by Elxsi, California, and the computers are now being marketed.

Tata-Elxsi's factory will be located at a half hectare site at Ang Mo Kio New Town with a built-up area of about 3,000 square metres. The manufacturing operation will go onstream this year.

According to Chandmal, what attracts Tata-Elxsi to Singapore where the computer industry is so young is the overall attractive investment climate with its political stability, excellent telecommunications network and strategic position, law and order and a strong commitment by the Singapore government to promote high technology industries.

"Specifically, the 10-year tax holiday together with a $38 million bank loan at 7½% interest granted by the Economic Development Board (EDB) of Singapore did swing the deal in Singapore's favour," Chandmal says.

"The Skill Development Fund (SDF) in which the government bears half the training cost of employees, and a mature supporting industry in electronics and precision mechanical parts also enable us to start off in a short time at a reasonable cost," he adds.

> **"The Elxsi System 6400 can utilise up to 10 central processing units working simultaneously"**

"The very avant-garde level of technology we are working on means Tata-Elxsi has to start with mostly expatriates. However, thanks to the Skill Development Fund, we are now on the look-out for qualified Singaporeans to be trained in the field we are working in both in the US and India. We are working in a very specialised field, away from the general data processing work. So, the question of recruiting experienced computer staff, which is in short supply in Singapore, does not arise."

Tata-Elxsi plans to market the computers in Australia, New Zealand, the Middle East, and Asia. To this end it will be setting up marketing arrangements in these countries.

Elxsi will also be operating a plant in San Jose in California which will cater to markets in the US, Canada, Central and South America, Europe and Japan.

The Tata-Elxsi multiprocessor, the Elxsi System 6400 can utilise up to 10 central processing units working simultaneously. Through the use of modular tightly coupled ECL processing units, a single processor configuration can deliver four million instructions per second (mips), while a multiple of 10 CPU's system can deliver up to 40 mips.

The key to this high performance is the 6400's fast main system bus, Gigabus. A synchronous 64-bit wide channel, Gigabus provides a system bandwidth of 160 to 213 Mbytes per second. Since all major system components attach to this bus Elxsi claims to offer a true multiple processor environment.

Elxsi offers up to 192 Mbytes of main MOS memory – the largest available on any system today and six times more than that of the largest IBM mainframes.

To take advantage of the system's unique hardware structure, System 6400 incorporates Emmos, the Elxsi Message Based Operating System. Emmos brings together recent advances in operating system design with the user-oriented features of interactive systems like Unix.

A process-based system, Emmos runs as low-overhead microcoded kernels in each CPU. Users simply attach task-oriented processes to these kernels as required. Communication with the system is via an easy-to-use, yet powerful command language, which the system executes interpretively – and concurrently, if multiple CPUs are available.

As Elxsi System 6400 operates on what it claims to be the latest state-of-art computer architecture, the system is not plug-compatible with the present IBM range of machines. Compared to the Cray mainframe which can process in excess of 30 mips, the Elxsi System 6400 is cheaper – its price tag of S$1½ million is a one sixth that of the average Cray mainframe, according to Elxsi.

Elxsi claims it packs more computational power into less space than any other commercially available system. Through the use of ECL and high density LSI components a four-CPU system fits neatly into a single air-cooled cabinet measuring 32 x 59 x 70 inches. This single configuration provides 16 mips of computational power while requiring only 11 KVA of power.

In fact on the four to nine mips level, Elxsi reckons to outshine various other machines from IBM, Prime, DEC, Burroughs and Hewlett Packard on a price performance ratio. The Elxsi with four CPUs will outperform a Cyber 176 while the seven to eight CPU machines will beat the IBM 3084.

The single CPU configuration is as competitive as the Vax-11/780 but will offer about three times the performance. In the mid-range, the four CPU system exceeds the performance level of IBM 3081 for roughly a third of the price of the IBM kit.

Each CPU offers many features aimed at maximising throughput in a multi-processing, message-based environment including 64-bit wide data paths; 50ns cycle time; 16 Kbyte, two-way set-associate cache (100 ns access time); 16 sets of two-way set-associate Translation Look-aside buffers; 16 sets of 64-bit general purpose registers.

Multiple contexts allow exceptionally high speed "context" switching (typically 10ns), while operating in a multi-stream multi-programming environment.

Each CPU includes Messenger and Scheduler functions as firmware. This section of the CPU is responsible for managing, synchronising and scheduling all interprocess communications and most context switching including process migration, without physically moving the process. Implementing these functions in firmware improves performance and reduces operating system complexity.

The instruction set includes variable length instructions designed to facilitate the use of high-level programming languages. The instructions offer a high degree of code compaction and a complete set of primitive, selected on the basis of actual program behaviour. Over 200 instructions ease code generation and make full use of the 32-bit address space.

An unusual feature of the instruction set is the absence of privileged instructions or addressing modes. Data movement from one protection domain to another is handled strictly through the message system.

Elxsi is also versatile as it allows variable length data to be manipulated in either integer or floating point (decimal) format.

A Performance Accelerator (PA) may be attached to each CPU for higher processing speeds. Each PA communicates directly with the CPU under its control.

To solve complex scientific and engineering problems the Elxsi System 6400 offers virtually unlimited memory and I/O capacities. This combination of very large real and virtual memory per user process enables it to handle very large number crunching tasks. It also simplifies the programming task by eliminating the need for complicated overlays or program segmentation.

Main memory in the system can range from four to 192 Mbytes Important memory features include: Internal Array Interleaving and four gigabytes of virtual address space per user process.

Elxsi's large scale input-output capability enables it to handle tasks previously thought to require multiple independent mainframes. The heart of the I/O Section consists of a dedicated I/O Processor (IOP) capable of driving two eight-Mbyte per second subchannels. Multiple IOPs can be configured in a single system.

The system also includes a dedicated Service Processor to provide performance and diagnostic monitoring of the system. It is also used to download system microcode from disc at start-up time and to configure the system based on parameter files.

The Elxsi command language is similar to Unix but with some powerful extensions. Commands are implemented using a command language interpreter. Further data may be piped directly from command to command, from the output buffer of one process to the input buffer of the next process.

Database protection and integrity features are provided by Embos and the disc subsystem via the use of "carbon files". At user option critical volumes can be recorded in duplicate by the disc controller. Dual-ported controllers and dual-ported discs drives provide multiple access paths to user and system data alike.

In addition to its powerful system command language, Elxsi supports high level programming languages most often used for scientific/engineering and commercial applications, including Pascal, the C Language, high intermediate Cobol and Fortran-77.

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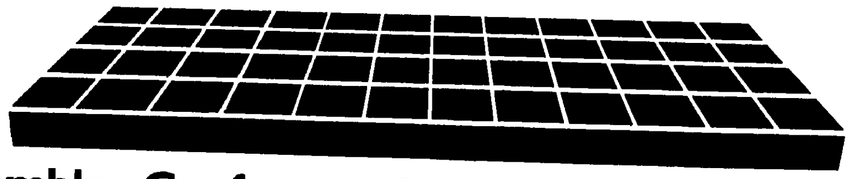

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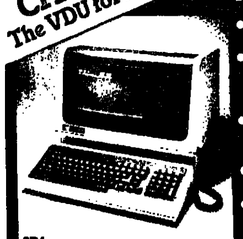

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EAST EUROPE

Robotron drive to sell more printers to West

Donald Kennett reports on some of the systems on show at Leipzig Fair

EAST GERMANY's State computer manufacturer has given a spur to its efforts to boost exports to the West. It has signed a marketing deal with Rank Xerox, which will sell Robotron's East German made daisywheel printers in Western Europe as well as on Robotron's home territory in Eastern Europe.

Rank demonstrated the printer, the model 255, being driven by a Xerox 820 personal computer at Leipzig Fair in East Germany last week. East Europe territory manager Geoff Lincoln said he thought the printer stood a good chance of selling in the UK, despite the failure of an earlier Robotron daisywheel printer two years ago, and the deal would enable him to increase sales of Xerox equipment to East Europe.

His company had traded in East Europe for many years, he said, and last year's sales there were £24 million. But it was tough going now because of the combined effects of the shortage of foreign currency in East European countries and the recession, which was causing Western banks to withhold lines of credit.

By running its own little balance of trade exercise, Rank could increase its sales and make its spares and support network more viable as well.

The company has previously concentrated on photocopiers. Lincoln said, "There is no xerographic industry in Eastern Europe, but office equipment is not a priority anyway." It now wants to sell the Xerox 860 word processor and 485 Group II facsimile transceiver there as well as the 820.

One of Robotron's aims is to boost exports overall and to the West in particular – and one of the strategies it has chosen for this is to engage in partnerships with foreign companies. It has already signed a deal to take the printer electronics from Commodore in West Germany in exchange for the mechanics based on its experience of producing typewriters since 1913.

UK managing director Walter Prokop said, "We think France will in future be difficult to ship complete units into, because the government is thinking about the problems of producing its own machines. So we are looking for partners to make the electronics for our new matrix printers as well. Then we can deliver complete units and create jobs in both countries."

In the case of the Micro Mind eight-bit microcomputer launched into the UK last year, the partner company, Daro Office Furniture, adds the floppy or Winchester disc drives from US manufacturers. Daro has so far taken delivery of 50 of the machines.

Robotron general director for export and import, Dr Frank Seiffert, said that the company exported three times what it imported and that exports grew by more than 10% last year. This year's target was to boost them by 15% or 20% to about £800 million, he said.

In the last few months the company has made four moves to improve its performance. It has launched a new range of typewriters, including electronic models some of which have text processing interfaces, and it has adopted its OEM approach to printer and floppy disc drive supply.

It has aimed its systems at specific applications. This has involved very little new hardware or software, but it has put together packages to suit different industry sectors, which is particularly important in East Europe.

Seiffert said, "There are at least 80 companies that make minis and microcomputers – knowing how to use them is crucial."

Quality assurance director Willi Eitzenberger said the K7221 eight-bit microcomputer, on which all the packages are based, was launched as a prototype at Leipzig Fair two years ago, but by last year's Fair only a handful had been sold. Since adopting the packaged approach, several thousand had been sold.

The versions include an office package with two eight-inch single-sided floppy disc drives and a new word processing program for the Russian language, a digitising system for printed circuit board layout with a drawing board and digitising arm, an engineering system with a paper tape punch for producing numerical control tapes for machine tools, and other packages for banking, farm management, steel construction and warehousing.

The imposing entrance to Leipzig Fair.

Geoff Lincoln, Rank Xerox East Europe territory manager, discusses strategy with product engineer Melvyn Bury.

The fourth strategic move the company made was to rationalise its own production processes, "working towards robotics and computer-aided design" as Seiffert said. Robotron is one of about five major firms developing its own robots on a small scale for its own internal use. This is an apparent contrast to the policy throughout the whole Eastern bloc of avoiding duplication of effort along with competition among themselves.

Another paradox in East German robot development is that the firm that specialises in automation technology, Automatisierungstechnik, has only one robot itself, although one of its divisions makes robot controllers and process controllers for everyone else.

There were even fewer robots on display than last year, when the star of the show was the Japanese Tosman welding robot from Toshiba, with a Swedish robot from Asea in the supporting role and a chorus of less agile prototypes from various Socialist countries. This year there were just three, two from the electrical engineering industry demonstrating pick and place operations and one from the Fortschritt agricultural machinery company simulating welding.

The situation is made still more mysterious by the claim in the official report on the progress of last year's economic plan that 7,700 robots were installed during the period and that this took the total so far to 21,900. This year's plan calls for 30,700 of them to be earning their keep by the end of the year, and this should rise to 45,000 by 1985.

This raises the question of exactly how robots are defined under this policy – and people ready to answer it were in short supply. A spokeswoman for Automatisierungstechnik said that most of the existing 21,9000 were at work on assembling mechanical watches, with some also serving on electronic components and television sets.

The official report says they went into machine tool making, welding, spray painting and warehousing, always relieving manpower of heavy and monotonous conditions and freeing it for other work. The production of robots by the industries that used them would be furthered by the development of subsystems such as sensors, grippers and hydraulic actuators, the report said.

Profits from commercial activities are centralised under government control and redistributed according to the economic plan. Objectives of this year's plan include modernising industry, raising productivity and increasing the quality and output of consumer goods.

Last year's level of redistribution of investment was up 5% on the previous year's at £15 billion, with just under half of it going into industry. The rest goes into free and subsidised social services. Modernisation and rationalisation programmes got 40% of the industry share.

Other East European organisations at the Fair included the Bulgarian Academy of Sciences, which launched an Apple II lookalike based on a 6502 processor bought in from the West. It has 64 Kbytes of RAM and a Bulgarian made 5¼-inch floppy disc drive and runs a Bulgarian operating system that was still being debugged at the show.

Elsewhere Kovo, the Czech export and import organisation, demonstrated the universal appeal of space invaders and other video games.

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Raytheon opts for the 'international' route to word processing

RAYTHEON'S new word processor, the RDS-200 Series, is manufactured in Japan, but the hardware design has been carried out in the US and the system software developed in the UK by software specialist Data Logic, taken over by Raytheon in 1978.

There are two models in the RDS-200 Series. The RDS-210 is a single disc machine which holds up to 160 A4 pages, and the RDS-220 is a dual disc drive version, which allows two tasks to ve handled simultaneously. Both have a main memory of 128 Kbytes and they link with Data Logic's Raytext shared resource system.

Data Logic, which distributes the Raytheon machines, claims some 11% of the UK screen based word processor market. It also supplies 12% of the IBM-compatible 3270 based distributed terminal systems, and 20% of the UK's network management and control systems. It has also committed considerable resources to systems software production based on Unix, Xenix and C.

Duncan Moore, Data Logic sales manager, said: "We don't just sell boxes, we place much emphasis on support. We can show this as we've got more support than sales staff. We also tailor the software, and can interface with just about every mini in the marketplace." The RDS-200 Series offers CP/M and supports all Raytheon printers.

Raytheon is a major supplier of electronic equipment to the US and UK military establishments.

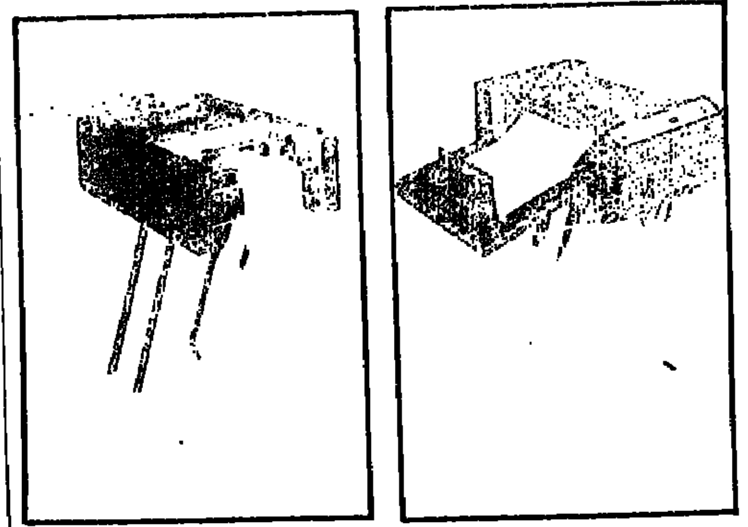
The RDS-200 is compatible with Raytheon's 1303 system, the modified version of which is the only word processor system to have cleared the Ministry of Defence's Tempest anti-monitoring capability standard.

Modern word processing systems can be monitored at distances of up to two miles, and there are several vulnerable points. A Tempest standard screen has gauze in it to prevent emissions being picked up and interpreted.

A Faraday case is constructed within the word processor housing, and certain normally electronic devices are altered. For example, in the 1303, the brightness control is a mechanical device.

Copper leads are another weak point, so all Tempest standard communications have to be via fibre optic cabling.

Data Logic (CW), 29 Marylebone Road, London NW1 5JX. Tel: 01-486 7288.



Mailing and Mechanisation's burster (left) and guillotine.

Burster and guillotine

FOR the small to medium sized computer installation, Mailing and Mechanisation has introduced the CEM 1182 Burster and the CEM MP 200 guillotine to its range of forms handling equipment.

Both devices are for use with continuous stationery, and the manufacturer says that their compact size and quiet operation make them ideal for use in an office environment.

The burster can cope with up to 10,000 feet per hour, and accepts forms from 3 inches to 12 inches in length and up to 15 inches width.

The guillotine is a microprocessor-controlled device and is kitted out as standard with a double/-single cut blade system, side sprocket trimmers, tractor drive units and safety covers.

Mailing and Mechanisation (CW), Mailmech House, 83 Copers Cope Road, Beckenham, Kent BR3 1NR. Tel: 01-658 2233.

Microlock guards data and hardware

THE TSL Microlock has been developed to counter the misuse of computer information and to provide basic security for the hardware.

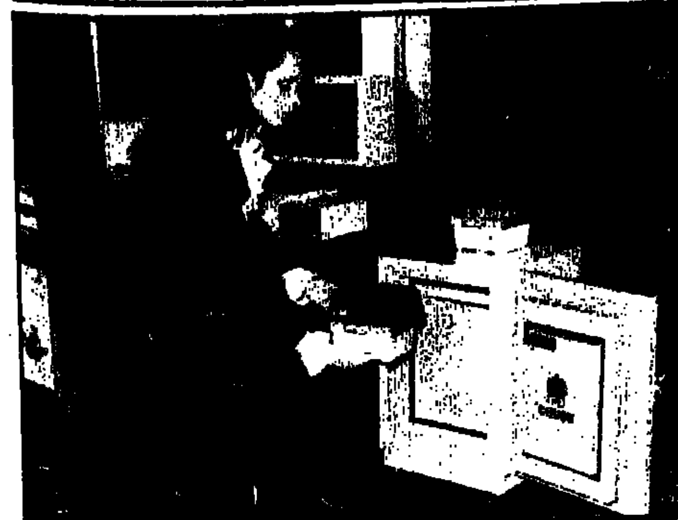
The Microlock can be connected between a computer and a local terminal to inhibit access to that terminal and, if required, to transmit card numbers to the computer. In its simplest form it can be used to replace computer "passwords" by inhibiting the received and transmitted data to a terminal until a valid card is inserted into the reader. Each card has a unique code, which when inserted is sensed by infrared light incorporated in the electronics.

In other applications, the Microlock can transmit a code number to a computer which can be programmed to decide if that card is allowed access to a particular program at a terminal. The computer can then send a command to the Microlock to allow or inhibit use of the terminal. The Microlock can also be used as a simple card reader connected to a terminal transmitting card numbers whenever a card is entered.

With the increasing problem of maintaining password security within companies, this new system is being marketed as an alternative method for tighter control to organisations requiring strictly limited access to their computers.

The Microlock, which can be remotely controlled from a main computer or terminal, is also the most advanced method of locking the computer room itself or any other security area.

Time and Data Systems International (CW), Crestworth House, Sterte Avenue, Poole, Dorset. Tel: (0202) 670055.



Chubb's Micro-Cabinet protects magnetic media.

Protect your floppies

CHUBBS new Micro-Cabinet is a firesafe designed to protect floppy discs and the valuable information that they store against the extremes of temperature and humidity.

Designed for any office which uses a microcomputer or word processor, the Micro-Cabinet can store floppy discs, data cartridges, cassettes, microfilm and other forms of magnetic media.

In a severe fire endurance test, the Micro-Cabinet maintained an internal temperature well within the specifications of diskette manufacturers. At the same time, the relative humidity remained at half the level at which all magnetic media can be damaged.

While giving fire protection to magnetic media, which in many cases may hold all a business's most vital records, the Micro-Cabinet is fitted with a lever lock to provide added security for items stored within the dust-free interior.

A price of £595 (excluding VAT) includes a free indexed tray with lid for storing 8in or 5¼in diskettes.

Chubb Lock and Safe (CW), 51 Whitfield Street, London W1P 6AA. Tel: 01-637 2377.

A new star is born

ACT

pulsar

16 BIT BUSINESS SOFTWARE

PULSAR business software is the creation of ACT – the company behind the Sirius 1 and recognised leader in 16-bit personal computing.

The new PULSAR range, developed by ACT at a cost in excess of £1 million, takes full advantage of the power and expandability of 16-bit computers.

It is inherently faster and more powerful than traditional 8-bit software.

And it is a true 16-bit range, designed and developed by ACT's own software engineers.

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AVAILABLE NOW FOR SIRIUS – IBM PC and DEC Rainbow coming soon.

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or call
021-454 8585

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Mailing system can save 30% on postage

PITNEY BOWES has introduced the latest generation 3100 COMS (computer output mailing system) to process computer-produced statements, invoices and other business forms efficiently – and enable some users to reduce their postage costs by up to 30%.

The 3100 COMS provides automated handling of bulky continuous forms. Suitable for large volume mailings by local government authorities, utilities, finance houses, insurance companies, building societies, industrial and direct mail organisations, the system works at computer output speed to save time and avoid a bottleneck at the mailing stage.

New features include automatic labelling with electronic sort; matching of separately fed documents; improved flexibility of document format and style; electronic "switching" of feeders to cope with changes in system requirements; selective envelope sealing; envelope overprinting and colour edge marking; statement diversion; and selective envelope stacking.

The 3100 system trims, separates, bursts, and folds computer printout.

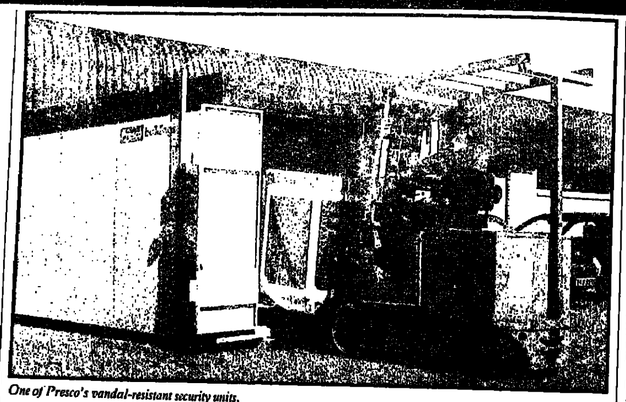
The 3100 can also insert a wide variety of documents such as brochures, direct mail booklets, postcards, cheques, letters and leaflets.

An "intelligent" labelling option has been developed to offer automatic online labelling of envelopes at speeds up to 6,000 per hour. The labelling unit can interpret coded printmarks on computer-produced labels, enabling the system to sort mail according to postcode.

Companies can benefit from substantial Post Office discounts – as high as 30% for pre-sorting mail this way.

When the information printed by the computer cannot be contained on the maximum size sheet for the system (20in × 14in), or where two sets of information are on different pages, the system can match these separate, but personalised, documents and insert them into the same envelope.

Pitney Bowes (CW), The Pinnacles, Harlow, Essex CM19 5BD. (0279) 26731.



One of Presco's vandal-resistant security units.

Vandal-proof storage units

PRESCO Buildings has introduced a range of portable security units, available for rental or purchase, to combat theft and vandalism. Constructed from heavy duty steel with seamless corners and welded to a rolled steel base frame, the units are designed for the safe storage of both computer hardware and software, stationery and records.

The heavy steel doors are fitted with security pattern welded hinges and two five-lever insurance rated security locks with unique keys. The closing edges of the two doors incorporate full height security guards.

Removable hydraulically operated "Easi-Load" jack legs are employed to facilitate transport and location. Each unit is also equipped with four crane lifting eyes, capable of lifting the unit complete with one-third of its maximum floor loading capacity. With the legs removed, the unit is supported on hot-rolled steel skids.

The range comprises twelve sizes from 2.4m long by 2.4m wide, to 9.6m long by 3.0m wide.

Presco Buildings (CW), Mochdre Estate, Newtown, Powys SY16 4LD. Tel: (0686) 28520.

How to keep your printing clean, clear and sharp

REGULAR cleaning of [illegible] wheels and "golf balls" is necessary to ensure consistently sharp, clear print. Two cleaning kits made by Innovative Computer Products provide an easy way of keeping them clean.

The printwheel cleaner, which is suitable for both plastic and metal print elements, consists of a plastics container with a deep fabric cleaning pad which is dampened before use with a special ICP cleaning fluid.

A shaft, which passes through the lid of the container, is used to hold the printwheel and rotate it against the cleaning pad.

The "golf ball" cleaning kit operates on a similar principle, and is suitable for all printing elements compatible with the IBM Selectric typewriter range.

"Printwheels are tough", says sales director Dick Sheppard, "but cleaning them without proper care can easily lead to damage or distortion. You can do a lot of harm with a matchstick and a piece of the office duster".

Action Computer Supplies (CW), 6 Abercorn Trading Estate, Manor Farm Road, Alperton, Wembley, Middlesex HA0 1WL. Tel: 01-903 3921.

Versatec's V-80F now plots on both film and paper.

Film and paper plots

VERSATEC Electronics has announced a new model of its V-80 11-inch electrostatic printer/plotter which offers hard copy on film as well as paper. The V-80 is the world's fastest mid-priced electrostatic printer/plotter, says the company, and the first of Versatec's third generation electrostatic products. The new V-80F enables the production of fast transparent overlays, overheads and photocopy masters direct from the storage tube or raster display terminal.

Film plotting offers a stable, accurate plotting medium, unaffected by climatic conditions. The production of film overlays directly from the computer or display terminal allows the integration of several layers of graphics.

Versatec (CW), 27-35 London Road, Newbury, Berks. Tel: (0635) 42421.

Facsimile terminal prints out in 15 seconds

A DESK-TOP digital facsimile system for businesses and offices sends computer printouts, balance sheets, graphics and documents in as little as 15 seconds using an ordinary telephone line. The Dex 3600 Digital Facsimile Terminal from Interscan conforms to Group 3 (the digital fax standard), transmits and receives high quality copies of handwriting, diagrams, printed matter or urgent information and provides an "activity report" giving printed proof of how, when and where documents were sent.

The Dex 3600 is claimed to offer the most comprehensive capabilities and the highest speed of any desk-top digital facsimile terminal on the market. Exceptionally clear sharp copies are obtained, says Interscan, since it automatically corrects for resolution and contrast variations.

Small enough for a desk or small worktop, the Dex 3600 needs no supervision; has an automatic document feeder for up to 30 documents and an automatic cutter that cuts received documents to the size of originals.

The activity reporting system provides users of proof of individual transmissions (with detailed sent and receive reports) as well as daily summary reports which give the machine's overall activity.

Interscan Communication Systems (CW), 39 Montrose Avenue, Slough, Berks SL1 4BS. Tel: (0753) 70821.

Arc launches low-cost 32-bit CAD

ARC has launched ARCAD, a low-cost entry level CAD turnkey system based on the company's drafting system, GDS. A four-workstation ARCAD system which offers the user three-dimensional design capability combined with relational database facilities, is priced from £70,000 including a powerful 32-bit minicomputer, four workstations, new enhanced GDS 3.3 software, a printer and a drum plotter.

"The combination of Arc's GDS software and workstations together with the latest 32-bit processor drastically reduces CAD/CAM entry costs and considerably widens the market for this quality of system," said Ed Hoskins of Applied Research of Cambridge. "We expect this system will have wide acceptance from users in both engineering and architectural design offices."

ARCAD will be available with Arc's new ergonomic workstation furniture, which has been specifically designed to house GDS hardware and software. The range of furniture includes adjustable chairs and tables which ensure the terminals are set at the correct height for maximum operator comfort. The height of the keyboard can be adjusted to minimise muscular strain.

GDS is a comprehensive drawing system providing greater accuracy in the rapid creation of drawings.

Applied Research of Cambridge (CW), 4 Jesus Lane, Cambridge CB5 8BA. Tel: (0223) 65015.

Keeping intruders at bay

THE technology of Eureka's intelligent tag, developed and patented by Senelco, has been applied to a range of microprocessor-based access control and other personnel identification systems.

System operation provides totally hands-free validation of an authorised tag holder up to a range of three metres from a sensor. Each sensor is linked to a local, dedicated microprocessor controller, programmed to provide a wide range of features usually reserved for online centrally controlled systems.

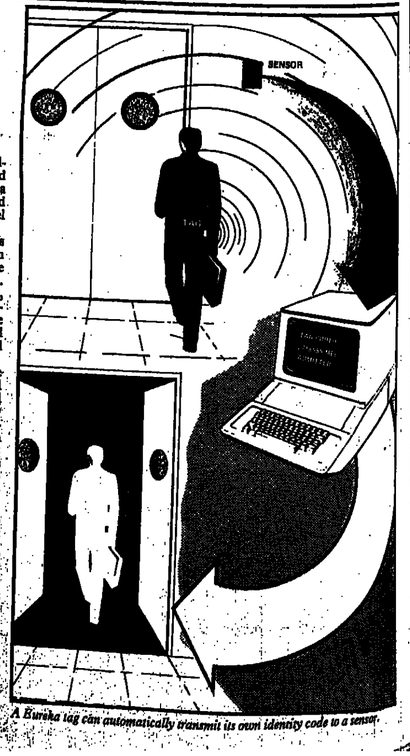
These include access levels, time zones, holiday programming and void tags, together with advanced methods to detect any attempt by an intruder to gain entry by following an authorised user through an open door.

If specified, sensor controllers can be connected to a central computer for applications which require data handling, such as time and attendance recording or personnel tracking and location systems.

Tags, measuring approximately 30mm square × 9mm thick can be combined with a conventional ID card for increased security. Tags need not be handled or even displayed, but need only to be carried on the person for effective system operation.

Coding capacity is such that any one code need never be duplicated.

Eureka Systems (CW), Deanery House, Upton Road, Slough SL1 2AD. Tel: (0753) 37722.



A Eureka tag can automatically transmit its own identity code to a sensor.

CTL adds to workstation range

COMPUTER TECHNOLOGY has launched the AWS Turbo Colour Graphics workstation, which can turn digital and numerical data into colour charts, graphs and pictures for business, scientific and engineering applications.

The workstation complements CTL's recent announcement of IWS Turbo graphics and offers colour as the latest addition to the company's programme of enhancements for its Turbo range.

Each workstation has a 16-bit processor plus an intelligent graphics board with dedicated graphics processor. This avoids the processing overhead usually associated with graphics to give improved terminal response.

Each colour graphics workstation comes with 128 Kbytes of display memory offering three 512 × 512 display memory planes. The 15in, high resolution 432 × 319 graphics display is organised as a combined graphics and numerics system, allowing the user to view any combination of text and graphics simultaneously or to zoom in on any object.

The system supports three levels of graphics software. First is the colour business graphics package for charting tabular data and editing graphics representations which also provides an interface to Multiplan, CTL's financial planning and modelling package.

Secondly the system supports graphics software primitives which can be used to create graphs and pictures to run on any of the Turbo workstations.

And thirdly, it supports application-level graphics subroutines which are language independent.

Computer Technology (CW), Eaton Road, Hemel Hempstead, Herts HP2 7LB. Tel: (0442) 3272.

APPOINTMENTS

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Sales Executive

West End
to £25,000 on quota+car allowance

Micro Networks Limited (MNL), is a young and fast growing company dedicated to the marketing of proven high quality computer equipment. Their products carry not only their own backing but also that of manufacturers of the highest repute in the world of computers.

MNL's success has been largely due to the ability to provide today's businessman with a reliable executive micro-computer. They are sole distributors for this system which features MS-DOS and CP/M 86 operating systems, capable of supporting a wide range of commercial and specialised applications software.

At the heart of MNL's operation is a highly talented team of software engineers and applications support personnel providing a comprehensive service to their client companies.

MNL now wish to appoint a Sales professional capable of handling major account customers.

You will have a successful track record of selling micro based products and be able to demonstrate a high degree of initiative and drive.

The earnings package is high and you will have the scope to build your own client base within a broad selling area.

For further details and an immediate interview phone 01-491-4706 quoting REF: YY/111.

Micro Networks Limited

Sales Executive

Surrey £20,000 on quota

Advanced Software Technology Limited (AST), is a fast expanding and successful distributor of high performance super micro-computer systems to the commercial and scientific sectors.

Their product range incorporates UNIX multi-user range based systems and provides for a broad selection of programming languages, applications and software packages.

With an awareness of the state of the art in technological terms coupled to their ability to recognise changing trends, AST has a commitment to developing new software techniques and therefore keeping ahead of their competitors.

This has been achieved by a wealth of experience and talent in their technical support and marketing teams.

In order to further enhance their position in this market, AST wish to appoint a Sales Executive.

You will have a sound knowledge of micro-computer systems but more important is the ability to demonstrate the confidence and enthusiasm to sell their full range of products.

This is an excellent opportunity for you to have the freedom to develop your own sales territory successfully and to make further progress into a Sales Management role.

The earnings potential is enormous coupled to a first rate chance to grow with an expanding organisation.

For further details, please telephone 01-491-4706 quoting REF: MJ/903.

ADVANCED SOFTWARE TECHNOLOGY LTD

Hardware Technical Writer

Royal Berkshire
c£9,000 plus an excellent benefits package

Digital Equipment Corporation is the world's leading manufacturer of small, medium and large minicomputer systems capable of satisfying the needs of a variety of Industrial, Business and Scientific markets.

One of Digital's U.K. operations is the European Educational Services development and publishing department, providing software and hardware course development and hardware technical documentation.

The Hardware Course Development group is responsible for the production of courses for Field service and now requires an additional Hardware Technical Writer to cope with its rapid expansion.

Your appointment will be to help in the development of modern techniques for hardware courses and manuals. This will include international liaison with other Digital groups preparing and writing technical course material using on-line word processing.

You will have the freedom to implement your own ideas as a dedicated member of an organisation at the forefront of education and training.

Your background will include Technical Writing and Field Service experience and preferably a knowledge of Digital's hardware. An understanding of French and/or German would be an asset but it is not mandatory.

This position will offer a high degree of interest and satisfaction and the opportunity for career progression is excellent. There may also be an element of European travel.

You will be offered a salary of c£9,000 depending on qualifications, with an excellent benefits package that includes Private Medical Insurance, Life Insurance, Sports and Social facilities, Relocation Assistance and much more.

For more information, phone 01-491-4706 quoting REF: RC/300.

RPG 2 Programmer

Watford c£10,000

Wibau UK Ltd is the parts and service centre of a large multinational construction organisation. Backed by highly sophisticated computerised techniques, Wibau operates one of the fastest and most reliable stock retrieval systems in the world.

The company currently runs an ICL ME29 Model 45 computer under TME which supports a network of fifteen VDU's and three printers. However, plans are already underway to replace their present hardware configuration to meet the demands of their ever-increasing work load.

To cope with this expansion, the company requires an additional Programmer.

Applicants will have upwards of eighteen months RPG 2 experience (hardware background not important) gained in an on-line communications environment. Reporting directly to the DP Manager, this is an ideal opportunity for a competent person who has the ability to learn new software disciplines and assume a technical and analytical role.

The position is based at modern premises in Watford although occasional travelling to other company locations throughout UK and Europe will be expected.

Fringe benefits include 25 days annual leave, subsidised restaurant, pension scheme, free life assurance and relocation assistance (where applicable).

For further details and an early interview phone 01-491-4706, quoting REF: YY/110.

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If you are a high performer and ready to move forward with Systime ring:

Vic March on Leeds (0532) 702277 office hours, (0924) 863588 between 7p.m. and 10p.m. or

Steve Williams on (0845) 567415 between 7p.m. and 10p.m.

Alternatively write with full career details to Personnel Department, Systime Ltd., Millshaw Park, Leeds LS11 0LT.

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102/106 South Street
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(2970)

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Required as soon as possible. Responsibilities include supervision of Physics/Computer Science CAL Laboratory, adaptation of CAL packages, and development of new packages. Equipment includes 380Zs, PETs, Apples & DEC VAX/Gigi terminals. Applicants should be graduates with relevant CAL experience. Appointment is to 30 September 1984 in first instance. Salary in range £5,501-£6,800 pa plus London allowance £1,158 pa.

Further particulars from College Secretary, Queen Elizabeth College, Campden Hill Road, Kensington, London W8 7AH.

(2986)

COMPUTER CENTRE

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Salary: £12,[illegible]-£14,[illegible] p.a. inc.

Applications are invited for the above post for which relevant experience and a higher degree or equivalent qualification are required. Lecturers in Higher Education who wish to combine their technical knowledge with managerial expertise are welcome to apply.

The Computer Centre is housed in a modern purpose-built building and provides a service to all Departments in the Polytechnic and surrounding colleges using a DECsystem-20 mainframe computer supporting up to 80 interactive users. This has recently been augmented by a VAX 11/780 computer system to support Computer Aided Engineering. In addition there is a range of mini and microcomputers. The main languages in use are Fortran, Cobol, Basic, Pascal and Macro.

The Polytechnic is situated on a single site within easy travelling distance of Cardiff and the South Wales coastline. The successful applicant can expect a variety of work in pleasant surroundings.

Further particulars and application forms may be obtained from:

The Personnel Officer
The Polytechnic of Wales
Pontypridd, Mid Glamorgan
CF37 1DL
Telephone: [illegible]
Closing date: [illegible] April 1983

The Polytechnic of Wales

SENIOR SYSTEMS ANALYST

Star Technologies, Inc. is a Portland, U.S.A. based company specializing in HIGH SPEED ARRAY PROCESSORS. Using advanced ECL gate arrays, the ST-100 is a powerful modular system which can support multi host/multi array configurations and has a computational speed of up to 100M floating point operations per second.

We anticipate a rapid expansion worldwide, and are looking for a fully experienced person to support pre- and post-sales activities in Northern Europe from our Berkshire office.

The successful candidate must be knowledgeable in the use of main frame and "midi computers" for scientific applications and be able to develop and run micro-programmed bench marks. Additionally, he or she must be communicative, personable and willing to travel.

Experience in Seismic Processing, Image Processing, R.T. Simulation and Large Scale Signal Processing will be an asset.

Extensive training will be provided at our U.S.A. facilities.

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This is a challenging opportunity to join a young, dynamic company in its early phase of growth. For further details, please contact the U.K. Branch Manager.

STAR TECHNOLOGIES, INC.
Cory House, Bracknell, Berks.
RG12 1ES. 0734 785017

(2872)

Your prospects couldn't be brighter

Berisford Information Technology is a wholly owned subsidiary of S & W Berisford PLC — one of the U.K.'s largest and most successful Organisations, with a turnover in excess of £2,500 million generated by over 250 diverse, world-wide Companies.

B.I.T. is responsible for all computing and communications within the Berisford Group and, as such, has gained experience of many manufacturers' systems including ICL, IBM, DEC, Data General, Computer Automation, Olivetti and Tandem.

In October 1982, B.I.T. began to market its expertise to external users and has already established Sales and Support bases in Cheshire and London. They are now an ICL Traderpoint and are regularly announcing additional hardware and software products — such as Epson and Tandem distributorships — with a view to developing a range of business solutions that cannot be matched elsewhere within the industry.

They possess the financial resources to validate their dramatic growth plans which include the opening of further branches throughout the country during 1983/84.

B.I.T. must now recruit skilled and ambitious individuals who recognise that the positions described below represent genuine opportunities for rapid personal development. In fact with B.I.T., your prospects couldn't be brighter.

BIT

Berisford Information Technology Ltd

Sales Executives

NORTH WEST **UNLIMITED EARNINGS**
LONDON **Five figure salary + bonus + car**

You should be a young, successful, system sales professional, ideally possessing experience with a computer manufacturer, who is attracted by this developing Organisation and its substantial financial and technical resources.

For the first time, you will have access to a proven, comprehensive range of business solutions with which to establish new marketplaces.

Based at either the Company's Middlewich or Central London Offices you will be provided with a realistic quota, a large territory that will include significant reference sites and opportunity for a high degree of self-management.

Your success will be rewarded; as B.I.T. continue to expand their operations throughout the U.K., the ambitious individual can look forward to career development and a consistently high level of earnings.

If you feel that you can rise to the challenge,
CONTACT **Paul Henry** on **061-833 0427** (24 hour answering service)
or 061-793 7151 (Evenings and Weekends).

Accounts Manager

LONDON **UNLIMITED EARNINGS**
Five figure salary + bonus + car

Your track record, demonstrable general business knowledge and personal skills should reflect the success and professionalism required to establish and develop a key account customer base.

Ideally, you will be a proven strategist practised in the management of sales campaigns, who has derived substantial orders from negotiations at the highest level. It is obviously essential that B.I.T. expands its user base in this area and you will be provided with comprehensive marketing and technical support in the achievement of this objective.

The incentives are strong, both in financial and career terms. They include a five figure salary earnings guarantee, a positive commission structure that allows for unlimited earnings — and the opportunity to control the destiny of your own personal development.

CONTACT **Paul Henry** on **061-833 0427** (24 hour answering service) or 061-793 7151 (Evenings and Weekends).

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Pre and Post-Sales

LONDON & THE NORTH WEST **Five figure salary plus Company Car**

Providing the complete spectrum of support skills from hardware and software specification through to user training, you will support products created specifically for the needs of clients, with responsibility for pre sales support, post sales technical advice, implementation, customer training and product enhancement.

We are therefore looking for two experienced d.p. professionals with the confidence, self-assertion and persuasive skills to operate in a dynamic sales environment and cope with a variety of Clients' needs. With this in mind you should be well versed in mainframe, mini or micro computer systems, within different user environments, either from a consultancy perspective, or from a diversely developed career to date. Additionally, alongside your analysis and technical skills, we expect you to be well versed in CP/M and/or CIS-COBOL techniques.

React to this bright proposition by contacting **Brian Mitchell** on **061-833 0427** (24 hour answering service) or 061-485 7798 (evenings and weekends).

Technical, Sales & Management Appointments

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BELGIUM: Avenue Louise 327, Boite 4, 1050 Bruxelles
HOLLAND: Willemsparkweg 92, 1071 H.M. Amsterdam

Computer Professionals

4, Kendrick Mews, London SW7 3HG Tel: 584 8790

Retailing Systems
Thames Valley £13,000+

Experienced designer required to work on new merchandising systems to be implemented on mini computers. Candidates must have knowledge of and experience in this area. Our client intends to sell this product internationally and is able to offer excellent career prospects and relocation assistance. Ref. 2403/A

COBAL Programmers
North Hampshire £8,000-£14,000

Expanding software house specialising in real time software development in the military and industrial systems field requires additional staff at varying levels. For the junior positions a minimum of six months' programming experience using COBAL is essential. More senior candidates will also need experience of GEC 4000 or DEC equipment. ref. 2403/B

Analyst Programmer
Middlesex £8,500-£10,000

A candidate is required to be 'No 2' in a small department. Responsibilities will include development of new systems for sales orders, processing, accounting and personnel records whilst maintaining existing major manufacturing systems. Candidates should have two years' experience in a commercial installation and preferably some design skills. Ref. 2403/C

Electronics Engineers
Surrey up to £12,500

A formal qualification in electronics allied to at least two years' software development experience is required to meet our client's need for people to work on a wide range of complex defence systems. Microprocessor or CORAL experience would be advantageous. Excellent benefits package including relocation is offered. Ref. 2403/D

Automation Systems
Rural Herts £8,000-£10,000

Autonomous subsidiary of large group developing instrumentation and automatic control systems to customer requirements seeks two additional staff to join existing teams. Candidates must have a qualification in a numerate discipline and a minimum of two years' programming experience. Ref. 2403/E

Programmer/Graphics Artist?
London £8,000-£14,000

Unusual requirement for a visually creative programmer with knowledge or appreciation of graphics. Candidates who should have a tertiary qualification should be able to work accurately and quickly to 'journalistic' type deadlines. For this position personal attributes are more important than specific technical skills and full training will be provided on VAX hardware, PASCAL and graphics. Ref. 2403/F

Office Automation
Herts £10,000-£14,000

A market leader is developing new products for the automated office and requires several technicians at varying levels to join the projects. Candidates must have a minimum of two years' real-time programming experience and ideally knowledge of UNIX and 'C' language although formal training will be given. Previous exposure to LANs and Networking would be advantageous. Excellent career prospects and relocation assistance offered. Ref. 2403/G

Analyst Programmer
North-West London £11,000-£13,000

The UK subsidiary of a major US Systems House specialising in transaction processing and networking systems needs a sound COBOL programmer with good design skills. The company's products aimed at the Banking, Financial and POS markets, are implemented on Tandem hardware on which full training will be given. Ref. 2403/H

Systems/Software Engineer
North London up to £12,000

Our client needs systems and software specialists to monitor the work of project teams to ensure that defined quality standards are met in the design and production of high reliability systems. Participation will be required in Design and Technical reviews as well as project progress meetings. Ref. 2403/J

COBOL Programmers
London/Surrey/Middlesex £8,000-£14,000

Two major software and consultancy organisations require programmers with good COBOL skills, preferably gained on IBM, ICL or DEC hardware, to work on a variety of projects in the commercial and financial sectors. Excellent training and promotion prospects for self-motivated candidates able to demonstrate communication skills and leadership skills. Ref. 2403/K

Systems Programmer – VME/B
Hants £9,500-£11,500

Our client needs a systems programmer with six months' minimum experience supporting SCL and various superstructure products in a large VME/B installation. Prior work should include two years using VME/B and a total of five years on ICL hardware would be preferred. Ref. 2403/L

ICL Programmers
London £7,000-£13,000

A rapidly growing systems house with several projects in the financial area requires more staff with three years' programming experience the most recent of which must be 12 months solid COBOL under VME. The rewards offered will depend upon how much relevant experience candidates can offer. Ref. 2403/M

Real-time Expertise
Surrey Border £12-17,000+

High technology systems house needs designers and consultants to be involved in development and installation of Air Traffic Control and Telecommunications systems. Familiarity with Assembler or real-time/mathematical languages is desirable. Substantial remuneration package and relocation offered. Ref. 2403/N

(3008)

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For further information, write to Computer Professionals quoting the advertisement reference no; alternatively phone Isabel Bruce or David Fatcher on 01-584 8790.

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ANALYST/ PROGRAMMERS

Must have IBM and assembler experience DOS, COPICS, DL1 or CICS advantageous.

Up to £12,500 per annum

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Technical support with good knowledge of IDMS/TPMS.

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Programmers with experience of Honeywell Level 66/DPS8.

SOUTH YORKSHIRE — **ASAP/12 months**
Programmer IBM MVS environment using assembler/CICS.

NORTH-WEST — **ASAP/6 months**
Systems Programmers IBM MVS with CICS, ADABAS advantageous.

LONDON — **4 weeks/5 months**
Programmer using TAL.

LONDON — **Various start/3-12 months**
Technical support VME/B and/or VME 2900 experience.

SOUTH — **April/12 months**
Tech consultant/manager, IDMS, Networks/Comms specialist.

LONDON — **ASAP/12 months**
Programmers Jackson structured COBOL on IBM site.

(3036)

TOP JOBS

IBM SYSTEM/38 SOFTWARE SALES

Company Car c£20,000 Quota

Due to ambitious, but realistic expansion plans, DATASENSE, the IBM System/38 software specialists have a vacancy for a salesperson.

Based in the London and Home Counties area, the position will involve the selling of a wide range of computer services including application software packages, bespoke projects and education.

The successful candidate is likely to be in his/her mid-twenties and should be able to demonstrate:–

* Good technical background
* Clear understanding of general application areas
* Previous experience of dealing with clients

As the skills required above are quite varied, applications from analytical D.P. professionals with a sales orientation will be welcomed.

A competitive renumeration package and company car will be provided and the right candidate should earn in excess of £20,000 p.a.

For more details or an application form contact either Ray Slattery or Trevor Monk on 01-803 8618.

DATASENSE LIMITED

Blue Line House, Eleys Estate, Angel Road, Edmonton, London N18 3BJ

(3023)

datasense

FTB

Management Opportunities in Systems Consultancy

Hampshire Salary to £17,000 + car scheme

Our client, a subsidiary of a substantial international group, is a fast-growing systems house providing a comprehensive range of products and services to clients operating in the European manufacturing and distribution sector. Major areas of activity include:

Business Consultancy
Manufacturing Packages
Commercial and Accountancy Packages
CAD/CAM
Data Collection
Personal Computers

To achieve planned growth targets, managing consultants are required to take full responsibility for the successful and profitable completion of contracts for major UK and multinational clients. Opportunities are available for significant career progression based on personal contribution to the success of the enterprise.

You are likely to possess a background in consultancy or systems development within the manufacturing and distribution sector obtained within a systems house, a computer manufacturer or a large computer user. Strong management skills, commercial acumen and the commitment and drive necessary to succeed in a demanding environment are essential prerequisites.

Salaries and benefits are aimed at recruiting and retaining high quality staff and are backed by fringe benefits including a car scheme. Relocation expenses will be paid where appropriate.

Please contact Brian Postles.

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Below are a few positions – we have many more – so for you it will be a question of choice.
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BRANCH SALES MANAGER
MANCHESTER Circa £30K

The client is a leading manufacturer/supplier of 32-bit high performance systems in networking/computer aided software engineering and ALL aspects of CAD. A high degree of technical expertise is essential for the successful applicant for this "ground-floor" opportunity.
CONTACT JEFF BOWMAN

BANKING SYSTEMS MANAGER
WEST LONDON Circa £17K + car

An in-depth knowledge of banking systems and the ability to develop new business is required for a position with a prestigious computer manufacturer. Age 30+.
CONTACT KEITH PENGELLY

SALES SUPPORT CONSULTANT
OUTER NORTH LONDON to £20K

A well qualified applicant with an in-depth commercial applications background and an appetite for hard work can secure this demanding key position within a fast expanding and progressive company. Rewards and fringe benefits are commensurate with the responsibility.
CONTACT TIM BRIDGES

MARKETING CONSULTANT – OFFICE AUTOMATION
WEST LONDON Circa £15K

This is a new requirement within a recently introduced marketing department, and encompasses support advice and guidance to the sales force, preparation of promotional material, evaluation of marketplaces, preparation of marketing plans, exhibitions, seminars, etc. An excellent opportunity for an experienced applicant.
CONTACT DON KNAGGS

PROJECT LEADER – NEW PRODUCT INTRODUCTION
BEDFORDSHIRE Circa £14-16K

The newly created post within one of the world's major forces in computing is to lead a team, growing to six people, responsible for the introduction of a major new product world-wide.
This product is a distributed transaction and data management system and the position requires the provision of a service to UK development teams, USA test teams, Product evaluation groups and subsequent customer support.
Candidates will need proven team leader management skills, experience of a reputable DP system and data base system with experience of COBOL and/or PL1.
CONTACT DON KNAGGS

SOFTWARE, SYSTEMS, ELECTRONICS DESIGN ENGINEERS
UK WIDE

We have been retained by clients in the Aerospace, Defence and Communications Industries to find candidates at all levels. The emphasis is on a background of mini/micro, real-time and electronics.
CONTACT KEITH PENGELLY

PRE-SALES SUPPORT
UK WIDE Circa £11-12K + company car

A number of pre-sales support staff, with specialist commercial and technical/defence skills, are required by our client, one of the top growth companies in the UK, with products ranging from mid-range systems to 32-bit minis and high performance networking concepts. Proven experience and an energetic approach will secure these important positions.
CONTACT JEFF BOWMAN

BUSINESS CONSULTANTS
LONDON £16-18K+

Excellent career moves for the three experienced business consultants, with broad backgrounds, for a variety of commercial, financial and industrial applications, versed in corporate information systems, and used to dealing at board level. The client is a well known major supplier, and early promotion and additional benefits are envisaged during this year for successful applicants.
CONTACT JEFF BOWMAN

SALES CONSULTANT
BASED IN LONDON Circa £25K OTE + car

Our client, a long established and highly regarded organisation are seeking qualified sales professionals to sell total system solutions to the industrial sector. To be successful, it is essential that applicants should be able to demonstrate a proven track record, with several years' experience of selling at a high level.
CONTACT TIM BRIDGES

DON KNAGGS
(Home Tel: 0299 400077)
KEITH PENGELLY
(Home Tel: 0342 872316)
JEFF BOWMAN
(Home Tel: 06846 3477)

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MK&A

Norsk Data are a rapidly expanding manufacturer of 16-bit minis and 32-bit supermins with our European and UK headquarters based in the Berkshire town of Newbury.

As a result of our continued expension we are looking for self-motivated individuals to join our

PRE-SALES SUPPORT GROUP

The successful applicant would have a varied and rewarding career within this fast-growing company providing in-depth technical expertise to our highly professional sales team. The support team also has a considerable contact with potential and existing customers.

The people we are seeking will have a good education and outgoing personality. They will have experience of at least one high level language and will be enthusiastic in the application of modern computing techniques in either technical or commercial environments.

The right people will be given the right training in order for them to achieve their full potential.

The standards we set are high so naturally we offer an excellent remuneration package: 4 weeks annual holiday, BUPA membership, accident insurance, contributory pension scheme, and group bonus scheme. Some positions also merit a car.

Please telephone Mike Cornelius or Andrew Evans on Newbury (0635) 35644 or if you prefer, write enclosing a C.V. to Norsk Data Ltd., Strawberry Hill House, Strawberry Hill, Bath Road, Newbury, Berks. RG13 1NG.
Telephone Newbury (0635) 35544. Telex 849819

Norsk Data

UNIVERSITY OF NOTTINGHAM
Cripps Computing Centre

SYSTEMS PROGRAMMER

Applications are invited for the post of Systems Programmer in the Systems Section.
The Centre operates ICL 2977 and 2976 under VME/B, a VAX 11/780 and several PDP-11 systems. Both wide and local area network development work is in progress, providing links to the University of Manchester National Computing Centre, the Midlands Universities network and PSS. A GEC Campus Packet Switching Exchange is also shortly to be installed.
The Systems Section is responsible for VME/B systems software, and the development of general operating systems software, including user commands interfacing to VME/B, a File Archiving System and News/Mail facilities. It is also responsible for the installation and development of a Unix based system on a PDP-11 and for an ICL PERQ.
The successful candidate will be developing systems software for one or more of the above mentioned systems, and a good knowledge of VME/B or VME 2900 and some Unix experience would be an advantage.
Applicants should normally have a good honours degree or equivalent experience.
Starting salary will be in the range £8,375-£7,655 (A) or £6,855- £8,370 (B). According to level of experience.
Further particulars and information forms, returnable not later than 30 April 1983, may be obtained from the Staff Appointments Officer, University of Nottingham, University Park, Nottingham NG7 2RD.
Ref No 889.
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(2806)

MICRO WHAT?

MICROFIN!

The established British manufacturer of portable data capture terminals are moving to new, larger premises at Addlestone in Surrey.
This expansion provides a unique career opportunity for three key individuals as follows:-

SALES
West London/West of England & Wales £11K Base. Target £18K
Portable Data Capture is a concept which requires flair and creativity.
We are looking for these skills together with drive, enthusiasm and the will to succeed.

SYSTEMS
Software Programmer—to £10K
To DEVELOP/MAINTAIN Systems Software for the Terminal plus the Communications and Application Development System.
2 years industrial BASIC/ASSEMBLER programming plus Communications software experience on MICROCOMPUTERS required (preferably CP/M based). Degree level qualification desirable.

HARDWARE
Service Engineer—to £10K
Responsible for in-house TEST/REPAIR of the Terminals, the candidate should have the ability to accept increasing responsibility for Service and Q/A functions. Minimum 2 years practical MICROCOMPUTER Hardware experience required (preferably CMOS 4000 based). Knowledge of ASSEMBLER/MACHINE CODE advantageous.
HNC/HND qualifications beneficial.

Telephone DOUG SNEDDON or JOHN WILLS on 01-486 5644 for an informed discussion.

(2984)

TOP JOBS FOR TOP PEOPLE

Insight Marketing & Personnel Consultants

MANCHESTER—Austin House, Charlotte Street, Manchester 1. Telephone: 061 236 7026
LONDON—72-75 Marylebone High Street, London W1M 4AJ. Telephone: 01-486 5644

Chief Operator

PO 1(D/E) £10,101-£11,781 Inclusive

This post is most senior in the Operations Section after the Operations Manager and comprises a range of duties assisting that post and directing; in particular, the Senior Operator and the Senior Job Control Assistant in the performance of their duties.

More than four years' experience at a supervisory level in an IBM DOS/VSE installation is required as well as a good working knowledge of relevant operating systems. Software used in a CICS and RJE environment.

Local Government DP experience is not essential.

A full job description and organisation chart is available to intending applicants who should telephone Mr Reeves on 01-570 7728 ext 3123 for further details or send full letters of application to Data Processing Manager, Computer Division, Borough Treasurer's Department, Civic Centre, Lampton Road, Hounslow TW3 4DN.

Closing date: 8 April 1983.

Hounslow
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(3019)

Maths & Computer Sciences Editor

ACADEMIC PRESS

A leading international STM publisher is seeking a Maths and Computer Sciences Editor.

The successful applicant will have approximately five years' experience in commissioning books and journals in maths and computer sciences at post-graduate and research levels.

Salary and benefits will reflect the seniority of this position.

Please send a comprehensive C.V. to the Personnel Manager, Academic Press Inc. (London) Ltd., 24-28 Oval Road, London NW1 7DX.

(2886)

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Our client is a highly successful US publisher of market research reports and marketing aids used by major companies throughout the world.

Reporting to the European Sales Manager, you will be responsible for stimulating sales to customers in the high technology industries, and you will be given considerable freedom to plan and organise your own work.

Aged 25+, you will probably be a numerate graduate with at least 12 months' work experience, ideally gained in sales or marketing. A good understanding of, or aptitude for, the high technology scene is essential.

The attractive benefits include BUPA and share option plan.

Please telephone 01-629 1844 at any time, or write for information, Ian White ref: FY 1307.

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(2980)

CAD/CAM Programmer

Clarks Limited, the largest manufacturer of branded shoes in the U.K., recognises the need for the development of high technology to maintain product supremacy.

We are, therefore, looking for a Programmer to join a small team working on the development of a CAD/CAM system.

The successful candidate will have a degree or equivalent in a numerate discipline and must also possess experience in some of the following areas:-

- *3D Surface Modelling*
- *Fortran*
- *Graphics (colour & monochrome)*
- *N.C. Machining*
- *Prime Software.*

We will offer an attractive salary plus large-Company benefits, including generous relocation assistance.

For more information, please telephone Peter Smith on Street (0458) 43131, ext 2476. Alternatively, please send full career details to John Holdaway, Staff Services Manager, Clarks Limited, Street, Somerset BA16 0YA.

Clarks

3005

Take a leading part in our IBM DEVELOPMENT PROGRAMME

Birmingham City Council is the largest City authority in England serving a population of over 1 million, and a diverse commercial and industrial community. The City Treasurer's Department has responsibility for over £700m expenditure p.a. on capital and revenue account. Playing a vital role in the Department is the purpose-built Computer Centre which operates an IBM 3033 NB with 5,500 megabytes of backing store to support over 400 terminals.

A challenging conversion and new application development programme is planned and we now require experienced persons to take a leading part in its progress.

SYSTEMS ANALYSTS Up to £11,859

Applications are invited from candidates with experience in systems analysis. Duties performed include:

- **Investigation and analysis of manual and computer systems.**
- **Design and construction of computer systems and manual procedures.**
- **Preparation of system documentation.**
- **Controlling the implementation of computer and manual systems.**
- **Maintenance and enhancement of systems.**

A knowledge of the following techniques is required:

- Computer Operating System
- Communications equipment
- Data Preparation mechanism
- Database Concepts
- Systems Evaluation

Good terms of employment include flexible working hours based on 36½ hour week, assistance with relocation in approved circumstances.

For an application form (to be returned by 21 April, 1983) candidates, male/female, should apply to:-

City Treasurer (Ref. PSO), Council House, Birmingham B3 3AB.
Telephone: 021-235 2385/2993.

Canvassing will disqualify.

(3033)

BIRMINGHAM CITY COUNCIL

COMPUTER SPECIALISTS
£10,000 TO £30,000 p.a.

Data Communications & Network Management

DATA CONNECTION LIMITED is a leading Software Development and Computer Consultancy Company specialising in:

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We require people of exceptional ability to join our team of consultants operating in the U.K. and U.S. Successful candidates will be in their twenties or early thirties with outstanding technical skills, or the ability to acquire them rapidly, in at least one of the following areas:

- *Software Design
- *Programming of Complex Low-Level Systems
- *Project Implementation and Management

Preference will be given to applicants with a sound business awareness who are readily able to communicate their ideas. First-class applicants are offered an impressive salary and benefits package.

DATA CONNECTION's rapid growth offers particularly good career opportunities for innovative professionals who will flourish in a demanding and enthusiastic working environment.

Applicants should write, enclosing curriculum vitae, to:
Ian S. Ferguson, DATA CONNECTION LIMITED,
Tower Point North, Sydney Road, Enfield,
Middlesex EN2 6UE.

DATA CONNECTION LIMITED

FTB

Programming Team Leaders

Analyst/Programmers

Hampshire **Salary £13,000**

Our client, a subsidiary of a substantial international group, is a fast-growing systems house providing a comprehensive range of products and services to clients operating in the European manufacturing and distribution sector. Project teams are engaged in providing consultancy on custom-built software and packages to major industrial clients.

Programming Team Leaders are required to control all programming activity within a project team and will be expected to provide significant technical design support in addition to ensuring that quality and standards are maintained whilst achieving agreed targets. All programming is in COBOL using interactive development facilities, dedicated development machines, database techniques and sophisticated programming tools.

Analyst Programmers are required to join teams installing packages and providing consultancy services on large contracts. Tasks are varied including client contact, systems design, analysis, specification and programming.

Training will be given where required prior to new staff being allocated to project teams.

Opportunities for career development are excellent and are geared to personal performance and commitment.

Salaries and benefits are aimed at recruiting and retaining high quality staff. Relocation expenses will be paid where appropriate.

Please contact Brian Postles.

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AGS Computers Inc. is a well-established American consulting firm in the field of Software Services. A team of technical directors from our U.S. offices will be travelling throughout England to meet you and discuss opportunities to work in our various locations. These include **New York, New Jersey, Connecticut, Massachusetts, Chicago and Denver.**

There are many exciting possibilities available in both telecommunications projects at the prestigious Bell Labs and commercial applications at work in the finance, manufacturing and insurance industries. Telephone communications opportunities involve work with diagnostic systems, digital voice, message switching, networking, and CAD. Large scale commercial work includes database, CPU-CPU communications and support.

If you have at least two years' experience in either Unix and C or PL/I IMS or Assembler/IMS, come talk to us. We'll tell you more details about the challenge and excitement of living and working in the U.S.A. We will also be happy to discuss opportunities for post-graduate students and professors.

Call our London office today to arrange an appointment at one of these locations. Early morning or evening times can be arranged to accommodate your work schedule.

BRISTOL	12-13 April	Unicorn Hotel
MANCHESTER	14-16 April	Portland Hotel
GLASGOW	18-20 April	Albany Hotel
NEWCASTLE	21-23 April	Crest Hotel

For those in the South, we will be in our London office on Monday, April 11th, and will return on April 24th.

Call or write to: Donna Fox, AGS Computers Inc., Suite 404, Asphalte House, Palace Street, London SW1. Telephone: 01-828 4377.

(2989)

CONTRACTS

PROGRAMMERS AND ANALYSTS

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★ 8100/DPCX Cobol Programmers with financial or insurance experience.

★ IBM Analysts with on-line experience and knowledge of large data volume systems. CMS an advantage.

★ IMS DB/DC ADF Analysts/Programmers with banking experience.

OVERSEAS

★ ICL Programmers and Analysts at various levels with a minimum of 5 years' experience preferably on ICL 2900 with Cobol or Fortran and VMEB. IDMS Database an advantage.

For further information on these positions and also to discuss your own requirements, please contact: Jackie Robbins or Sandra Monks for an appointment or send your full cv which will receive our prompt attention.

(2926)

FORCE 8 computer services

8 Mint Walk Croydon 01-680 3761

Systems Analyst

Retail Systems Development Projects Kingston to £9,000

Bentalls is one of the largest independently-owned store groups in the UK and firmly established as a leader in the retail trade.

We are looking for a Systems Analyst whose main task will be to develop retail systems for all branches – with the initial emphasis on the development of computerised stock control in our heavy goods warehouse.

The brief is • to define and develop retail systems • to investigate and implement systems in conjunction with our DP department • to work with user departments to ensure operational effectiveness.

This is a key job carrying considerable responsibility for project work. We are committed to developing usage of an IBM System 38 throughout the organisation.

Ideally with previous experience in retail systems, you should be a good communicator who would enjoy working with users to achieve results.

Salary will be negotiated up to £9,000, depending on experience. Benefits include 20% staff discount.

Please send a full c.v. to Peter Flower, Personnel Controller, Bentalls plc, Wood Street, Kingston upon Thames KT1 1TX, Surrey.

Bentalls OF KINGSTON *Share in our success!*

(2938)

Systems Programmer

An interesting opportunity has arisen for a Systems Programmer at the Headquarters of the National Radiological Protection Board at Chilton in Oxfordshire.

It is anticipated that a main frame computer will be installed by July 1983 and the successful applicant will be required to assist in the establishment of a computing facility within the Board.

The Systems Programmer will be responsible for the maintenance of all manufacturer supplied software and the implementation of procedures for the most efficient use of the system.

Following the establishment of the facility and the transference of the current workload from external Bureaux facilities, the appointed person will be encouraged to broaden his/her responsibilities to eventually undertake the operational management functions.

The appointment will be in the grade of Higher Scientific Officer and starting salary within the scale £7320-£9765 depending on age and experience. The salary scale will be subject to review from 1st April 1983.

Further information and an application form can be obtained from the Personnel Officer (Ref: PERA 179), National Radiological Protection Board, Chilton, Didcot, Oxon. OX11 0RQ. Tel: Abingdon (0235) 831600 Exts. 553 or 548. Closing date for applications 15th April 1983.

National Radiological Protection Board

(2994)

PROGRAMMER/OPERATOR

MARKET HARBOROUGH

Crosby Valve and Engineering Company run a variety of applications from accounting to manufacturing on an IBM System 38. We now seek a Programmer/Operator with at least 2 years' relevant experience on IBM GSD machines. Preference will be given to those with experience in RPG11/111, as it is envisaged that this position will become one of full time programmer within the near future.

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CROSBY VALVE AND ENGINEERING COMPANY LIMITED
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Phone (0858) 67281

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We have a number of opportunities for people with experience in either a commercial or military environment with any of these skills:

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(2996)

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Box number replies should be addressed to:

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Sen. Systems Analyst
Berks. c. £11,000

The parent company of a major manufacturing group requires a self-motivated commercial systems analyst with experience of reporting package development and capable of liaising with senior finance executives.
Applicants should be familiar with RPGIII or similar language and database management systems on IBM System 38.
Contact Brian Coates

Project Mgrs./Consultants
Hants. c. £16K + car

There are several openings for very experienced technical software specialists to join a company with an A.1 reputation for developing high technology systems. We are keen to hear from people with experience from: C^3, civil or defence real-time systems, comms., networking etc. with knowledge of MASCOT. Excellent opportunities for further career development plus overseas assignments in certain cases.
Contact Terry Harvey

Computing in Finance
London £8K – £13K

The application of computers to the requirements of the financial sector is a thriving business presenting opportunities for design, innovation and improved services. Our client is a leader in this business and requires people with good, real-time mini/micro experience to work on a range of projects using DEC VAX, D.G. and IBM equipment.
Contact Brian Coates

Software Support
N.W. M'sex to £14K + car

Continuing success fuels the need for more technical support staff in this expanding company. They require software specialists with a minimum of 4 years experience gained from: O.S., data comms., real-time and/or D.B. systems. People with banking or financial applications experience are also required for the City office where the salary may be higher but no car is provided.
Contact Terry Harvey

Project Ldr. Product Intro.
N.H. Counties £13K–£16K

This position calls for a background in software development with a computer manufacturer. You will be responsible for the controlled introduction of a major new product into an existing client base. You will form a team which will link development, support and the customer. Experience gained with T.P. Systems and D.B.M.S. will be useful.
Contact Terry Harvey

CORAL Programmers
Beds. £8K-£12K

The continuing sophistication of digital electronic telephone exchanges has in turn led to the demand for applications which can provide management and systems information. Our client is building specialist development teams requiring programmers, designers and team leaders. We would like to hear from people with experience working in CORAL or similar. A knowledge of Call Logging would be useful.
Contact Brian Coates

M68000 Team Leader
Herts. £13K – £16K

A very experienced person with mixed S/W and H/W disciplines is required to join an expanding message switch development group. The Company has a go ahead exciting style, making extensive use of sophisticated development aids. Their multiple M68000 based product is a major advance on the market. The successful applicant will help in new, important applications. Additional S/W team members also required.
Contact Terry Harvey

Applications Support
S. Hants. to £15K + car

If you have a bright, outgoing manner and experience in commercial and financial applications you could find an exciting and rewarding career with this client. You would be required to provide pre and post sales support to customers using a range of business and management information software. The prospect of a future move to direct selling is there for the right candidate.
Contact Terry Harvey

Digital Designers
Herts. £9 – £13K

Electronics engineers with up-to-date experience in the design and development of micro based controllers, drivers, interface boards etc. will find the development facilities in this company to be second to none. The company's product line in data communications is being continuously expanded. Engineers with assembler ability and knowledge of M68000 are particularly welcome.
Contact Terry Harvey

Assembler Programmers
N.W. Herts. £8K – £10K

A small but expanding micro-systems company is seeking two additional technical programmers. Projects are varied and usually challenging and innovative. We require applicants who have enough experience to work with minimal supervision and the manner and ability to work on a client's site if necessary. A delightful rural base necessitates having your own transport.
Contact Terry Harvey

Comms. Support
Herts./M'chester £13 + car

If you have a background in development or support of communications products, we have a selection of opportunities for you. We would expect you to know a range of BSC protocols and have had recent experience linking into an S.N.A. environment. If you also have X25 knowledge so much the better. A good client liaison manner will be required.
Contact Terry Harvey

Real Time Software
Herts. to £10,000

Additional team members are required to work on the implementation of client systems in the area of process control. Successful applicants can expect to contribute to the total development process including client liaison and post acceptance support. Any experience in process control or message switch with DEC and/or M6800 equipment would be useful.
Contact Brian Coates

Technical Author
Wilts. c. £9,000

This position calls for an experienced technical author who has knowledge/experience with software and hardware. The company designs, develops, manufactures and markets micro based computer systems. Your work could cover user operating instructions, technical data sheets, marketing brochures etc. You would be part of an existing publications team with prospects for career development.
Contact Terry Harvey

Telecomms Consultants
London £15K-£18K

Within the world of technical systems consultancies this client has a reputation second to none in the area of telecommunications. Several specialists, or consultants with experience from: networking, message switching, packet switching, EFT, banking comms, security systems, comms, hardware and international telex, are required urgently for current projects in the financial sector.
Contact Brian Coates

DEC VAX Applications
Hants. c. £9,000

This is an opportunity for a career minded programmer to join an expanding department and gain valuable experience on VAX systems. The work involves analysis and programming on pensions and insurance applications. Programming is done in Basic and RPL under RSX IIM and VMS operating systems. Excellent company benefits and secure future.
Contact Terry Harvey

X.25 Development
Herts. £8-15K

Our client is engaged in the design and development of a very large packet switched network. The completed system will involve the installation of hundreds of computer nodes throughout the U.K. If you have from two to ten years experience in systems software or real time applications please apply. Comms. is desirable but not essential. Reloc. assistance.
Contact Brian Coates

Software Engineers
Beds./Bucks. to £11K

We are particularly keen to hear from applicants with two or more years experience of software development using assembler and/or a high level language. Our client is developing advanced communications products using PDP 11 and Intel M.D.S. You will be working with UNIX and writing mainly in PLM 86. An excellent opportunity to strengthen your existing skills.
Contact Terry Harvey

Computing Consultants
N. M'sex. £10K – £20K +

We are seeking a number of outstanding computing specialists to join a small but expanding computer services company and consultancy. Projects cover complex user applications, manufacturers' system developments and assistance to other consultancies. Contact us if you can contribute on comms., networking, D.B. design, D.D.P., P.O.S., equipment selection or machine-to-machine interfacing.
Contact Terry Harvey

Product Support
Berks. to £15K + car

Our client is the expanding U.K. subsidiary of a major North American software packages company specialising in the top end of the mini-computer market. The company's products provide file enquiry, update and editing facilities with sophisticated screen handling and report producing aids. We would particularly like to hear from HP3000 programmers with a good knowledge of MPE.
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Previous recruitment experience is not essential. However, you should be able to relate to a wide range of people, be at ease in any company, be able to assess people quickly and accurately, have no hesitation using the telephone and be prepared for long hours. You will need to be literate, to plan your work and be resourceful. You will be: assisted with client introductions, backed by an advertising budget and supported in your start up months until you are fully trained.
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Opportunities exist in a major international organisation specialising in high technology utilising the latest software development related to office automation and communications.

It is essential to have at least two years experience in top-level software design and implementation on two major projects coupled with hardware appreciation and skills in team management.

Knowledge of real-time systems in which the software architecture has been constructed to cope with a multi user load, is necessary.

Experience of OSI and knowledge of protocols such as X25, HDLC or SNA would be a distinct advantage.

There is also a desire for analytical skills in relation to the decomposition of software modules into realistic, logical and manageable sections, to enable the development of Item Requirement Specifications. These will produce the required information necessary for continued development.

Good financial rewards coupled with large company benefits are offered along with the opportunity to work in a progressive technical environment.

For further information contact:
Janet Chilvers on 01-734 7394 during the day or on 01-359 4997 evenings and weekends.

WARWICK WOODWARD
A SPAN GROUP COMPANY
(3001)

D.P. & SYSTEMS MANAGER

WEST YORKS £9-11K + BENEFITS

The company is a multi-million pound Freight Forwarding Division of an International Group and has recently installed an MCS Datafreight System on to a DEC PDP 11/44.

They now need to recruit a D.P. & Systems Manager to control their day to day running and the implementation of further planned development stages. Reporting to the Financial Director, the successful candidate will be totally responsible for this new D.P. department and will be expected to extend its operations to other locations and to implement, at a future date, a variety of packaged software.

If you have sound applications knowledge preferably, although not essentially, within Freight Forwarding, are from a Programming, Systems Analysis or Operations background and are interested in this exciting opportunity to develop your career, then

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SYSTEMS ANALYSTS ANALYST/ PROGRAMMERS PROGRAMMERS

£highly competitive

Our client, a major manufacturing organisation centred on the South Coast, has established itself as world leader in its field. Substantial investment in computerisation and continuing development of all control and information systems have created a requirement for a number of **Systems Analysts.**

The ideal candidates will have gained their experience in an industrial environment and should possess a working knowledge of database and telecommunications. Hardware is based on an IBM 4341 running under VM/CMS and DOS/VSE and experience gained in a similar installation would be highly advantageous. The company is also looking for **Programmers** and **Analyst/Programmers** with a minimum of two years' experience of COBOL, CICS and DL/1 to strengthen the existing teams. In addition to highly competitive salaries, our client provides a range of benefits, including an excellent relocation package and opportunities to develop a stable career in a stimulating environment.

LOCATION: HAMPSHIRE **JA817/1**

NCR

INTERNATIONAL AUDITOR

£attractive package

Building on almost a century of success, NCR serves the information processing needs of a wide range of industries and businesses throughout the world. By providing a comprehensive range of business information processing equipment, NCR has grown to annual revenues of more than 3.5 billion dollars.

A vacancy now exists for an **International Auditor** to join the European Region Corporate Audit Group based in London carrying out operational, financial and systems audits at NCR locations worldwide. Candidates should therefore be prepared to travel extensively outside the UK. A financial qualification is required coupled with a proven track record in auditing, business practices, procedures and controls. Applicants should also be able to demonstrate a thorough understanding of EDP. In addition to an attractive salary package, NCR offers a range of benefits normally associated with an organisation of their standing.

LOCATION: WORLDWIDE **JA817/2**

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STAFF AT ALL LEVELS

c£8-20,000

Due to major expansion our client, an established software house, is seeking to recruit staff at all levels to work on their customer sites in and around London. Applications are invited from D.P. professionals with experience at any level in the following areas:

- ★ **IBM MAINFRAME**
- ★ **PL/1** and/or **COBOL**
- ★ **IMS, DB/DC, CICS**
- ★ **ICL 2900**
- ★ **VME/B** and/or **VME 2900**
- ★ **IDMS** and/or **TPMS**

The company offers excellent salaries and conditions of employment.

LOCATION: LONDON **JA817/3**

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CONSULTANTS

to £17,000 + car

Our client is one of Europe's leading systems consultancies with a commitment to providing quality software services. Increased business has created a requirement for Consultants to work on a number of projects within a complete range of military applications and software. The successful candidates will have proven ability in any of the following areas:

- ★ **DATABASE TECHNOLOGY**
- ★ **REALTIME SYSTEMS**
- ★ **MINI/MICRO HARDWARE (preferably DEC)**
- ★ **ASSEMBLERS, FORTRAN, COBOL, PASCAL**

In return our client offers excellent salaries, in a range according to experience and a comprehensive benefits package.

PK817/4

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PRIME JNR. PROGRAMMER £7,000

Company situated in Central London is looking to recruit a Junior Programmer with 12-18 months' experience, preferably gained within a Prime background. Candidates should ideally possess a working knowledge of Fortran programming techniques, however training is possible where necessary. Perks include a very pleasant working environment and subsidised restaurant.

IBM ANALYST/PROGRAMMER DOS/VSE £10,000

Recent IBM user is seeking to recruit an Analyst/Programmer with a sound commercial background, preferably to include knowledge of either financial or *stock control systems. Candidates should* possess a strong programming background including familiarisation with VSAM/BTAM and preferable CICS. Other systems would be advantageous, however, not essential. Career progression is assured as this company is a market leader in its field.

IBM PROGRAMMERS System 34 £7,000+ Benefits

Banking organisation situated in C. London is seeking to recruit Programmers with 18 months' RPGII/III experience. Particular interest *will be taken* with applicants possessing banking or financial experience, although other commercial background will be considered. Perks are excellent and include a very generous mortgage facility and personal loans.

ICL SENIOR PROGRAMMER £10,500

Progressive company based in N. London requires a Senior Programmer with a minimum of four years' experience. Candidates should be familiar with MTS on-line programming techniques together with a sound appreciation of DME GII Cobol programming. Small project leadership is desirable, however not essential, as team work is of the utmost importance in this friendly environment. Perks are varied and includes five weeks' holidays and company season ticket loan.

HONEYWELL L 64 PROGRAMMERS £7-£11,000

Two installations based at both extremes of Greater London seek Programmers with a commercial background, varying from six months' to four years' Honeywell Cobol programming experience. Knowledge of TDS on-line programming techniques will be an advantage for the senior positions. A general appreciation of Cobol is desired for the junior positions. Career progression through to Analysis is assured by both companies dependent on aptitude and desirability.

HONEYWELL L66 PROGRAMMERS to £11,000

Expanding commercial organisation based in London is seeking Programmers with a minimum of 18 months' Honeywell Cobol experience. Applicants possessing knowledge of either IDS I/II database systems and/or TDS/DMIV TP systems would be of particular interest, however, other Honeywell experience will be considered. Perks are varied and include company product discount.

ICL ANALYST/PROGS £9,500

This installation based on the stockbroker belt is looking to enhance its Systems and Programming capability by recruiting VME Programmers with 18 months' experience to Analyst Programmers with four years' commercial experience. Applicants should possess either an understanding of IDMS/TPMS for the programming positions or a minimum of nine months' systems experience for the Analyst/Programmer position. *Career prospects* are excellent and include potential project leadership for the right applicants.

(2927)

ANALYST/ PROGRAMMERS

(£9K to 12K)

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INTERNATIONAL OPPORTUNITIES

LONDON BASED

Aregon has established an international reputation in videotex systems. This success, particularly in transaction processing applications, is leading Aregon into new fields of software development. Analyst/Programmers are invited to take part in Aregon's business expansion and to work on projects which include:

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Opportunities exist at different levels for people who have skills from among the following: VAX, PDP/11, VMS, RSX, Fortran, Macro, protocol emulation and commercial applications including database products. Analyst/Programmers with some of these skills wishing to expand their experience in a stimulating environment should apply in writing or by telephone to: John Graham, Managing Director, Aregon Products.

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(2973)

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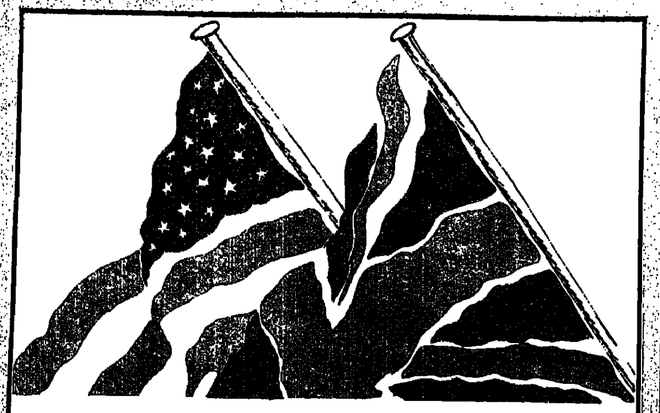

USA

UNIVAC 1100

£20,000 – £30,000

START DATES: APRIL/MAY 1983

We have been retained by a major international software house which has its head office in continental Europe. Our brief is to put together a large team of programmers, analyst/programmers and team leaders to work on a substantial project which they have been awarded in the United States of America.

We are looking for people at varying levels with solid experience of UNIVAC 1100 systems and associated software. Our clients offer an attractive package based upon one-year renewable terms. Naturally they provide paid air passages and the full range of benefits associated with intercontinental assignments.

We will be starting to make specific job offers within the very near future, so if you wish to be considered please telephone or send your detailed CV to us as soon as possible.

[illegible]

Norsk Data is the rapidly expanding manufacturer of 16-bit and 32-bit superminis with our European & UK Headquarters based in the Berkshire town of Newbury.

We are expanding our R & D activity in Newbury by starting a new Data Communications Group. The present R & D operation is noted for the quality of its work and for adhering to timescales.

R & D – Data Communications Group
Salary to £12,000

This Group will work on the development and implementation of data communications products on our ND-100 and ND-500 computer systems.

These systems are used by users with the most demanding communications requirements in the industry. To begin with the Group will concentrate on products using X-series recommendations such as X25, X3, X28, X29 and the "Coloured Books", for example the Network Independent Transfer Service and the Network Independent File Transfer Protocol.

We are looking for people to join the Group. They will have university standard education. They must have some years experience in data communications, X-series recommendations and/or "Coloured Books". Real time experience will help too. Besides that we want people prepered to take the initiative, develop good ideas, and with plenty of drive to follow the projects through.

This work will be rewarding because the Company, the atmosphere, and the equipment are right. And there is excellent future career potential.

Rewards

Besides salary the benefits are 4 weeks' annual holiday, BUPA membership, accident insurance, contributory pension scheme, and group bonus scheme.

Contact: Andy Pepperdine
Tel: Newbury (0635) 35544
Send c.v. and mark "Confidential"
Norsk Data Ltd., Strawberry Hill House, Bath Road, Newbury, Berkshire RG13 1NG

Putting people first

Norsk Data

Software Engineering

Somerset up to £14k

Plessey Marine – an independent business within Plessey Electronic Systems Limited – is the main sonar contractor to the Ministry of Defence. Its Research Unit at Templecombe in Somerset is at the centre of advanced sonar technology, and is looking for high calibre, degree-qualified people – preferably in electronics or computer science – to share in the technical leadership of its teams engaged in the rapidly expanding field of Marine Electronic Systems.

The projects are in distributed processing, specialised hardware control, micro-processor aided displays, and signal processing. Opportunities exist for all levels of experience and aptitude:

Systems Analysts able to lay down the framework of a multi-processor design from customer requirements, and to communicate and control these designs during implementation.

Software Systems Designers able to develop the detailed software design concepts and lead technically a team of implementation programmers.

Programmers wishing to develop their existing programming abilities and level of design responsibility.

Software is developed using a Host-Target approach. The host computers are DEC PDP11 and VAX machines, supporting INTEL 8086 and TI 9900 microprocessors. Languages used are CORAL 66, PASCAL, and ASSEMBLER, which are normally used in conjunction with a highly developed MASCOT design and implementation methodology.

Salaries will be in a range up to £14k. Big company benefits include help with relocation to our attractive part of the West Country, within easy reach of the South Coast and enjoying the advantages of reasonably priced housing in surrounding country towns and villages.

Please ring Peter Whitfield, Technical Resourcing Manager on Templecombe (0963) 70561 for an application form, or send a full cv to him at Plessey Marine Research Unit, Wilkinthroop House, Templecombe, Somerset BA8 0DH. Please quote reference TEM/241.

PLESSEY
electronic systems

TRAINING OPPORTUNITY REQUIRED

Intelligent male in twenties seeks employment as a Trainee Computer Programmer or Trainee Computer Operator using mainframe machine. I have rudimentary knowledge of a small system plus a wide range of banking/accountancy experience. Willing to work for expenses only for trial period. Areas preferred: London, South-East, Midlands.

Replies to Box No. 1281, Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey. (3047)

UNIVERSITY OF ESSEX
Department of Electrical Engineering Science

Senior Lecturer/Reader in Computing Engineering

Applications are invited for the post of Senior Lecturer/Reader (salary £12,820-£16,180) for appointment from October 1st, 1983, in the field of Computer Engineering. Candidates should have an honours degree and relevant experience, together with a strong research record in computer engineering. Applicants with an all-round ability in hardware and software with a special interest in microprocessor applications are encouraged to apply.

The person appointed will be expected to teach courses at undergraduate and graduate level and to take part in and initiate research in the field of computer and microprocessor engineering. The Department has a long history of research in what has recently become known as Information Technology and this post is seen as enhancing these activities.

Applications (nine copies, quoting reference AG/156/CW) including a curriculum vitae and the names and addresses of three referees, should reach the Registrar, University of Essex, Wivenhoe Park, Colchester CO4 3SQ, from whom further particulars may be obtained, by April 28th, 1983. (3027)

UNIX·UNIX·UNIX·UNIX·UNIX·UNIX·

INTERNALS SPECIALIST

£14,000 HERTS

WARWICK WOODWARD — A SPAN GROUP COMPANY

43-44 GREAT WINDMILL STREET, LONDON W1V 7PA
TELEPHONE: **01-734 7394** 24 HOUR ANSWERPHONE

It fills a key role in a forward-looking, high technology organisation, which is developing demanding applications packages, to run on the UNIX system. Your specialised knowledge will be used to enhance the communications and security aspects of UNIX. You will also play a major part in the design, implementation and support of real-time systems related to office automation and communications.

An in-depth understanding of UNIX internals is a prerequisite for this position and a knowledge of communications would be a definite advantage.

This is an excellent opportunity to use all your skills within a professional organisation dedicated to this rapidly expanding development area.

For further information please contact: Janet Chilvers on 01-734 7394 during the day and 01-359 4997 evenings and weekends.

(3000)

We can certainly provide you with 'food for thought'. Our client is one of the largest wholesale and retail food distribution companies in the UK. They have over 1000 retail outlets including their own supermarkets.

They have recently invested extensively in the enhancement of their systems. The DP operation provides vital support and effectively co-ordinates the group's activities—primarily through a network of ICL ME29s. This massive development plan has opened up stimulating and unrivalled opportunities within their head office in Middlesex.

2 SENIOR SYSTEMS ANALYSTS to £14,000+car

Reporting to the DP Manager, the first project will be to develop a merchandising/marketing system. Career prospects are exceptional if you have the potential. Preferably, but not essentially, you will have retail or distribution experience. Good ICL experience is necessary...ME29 preferable. Plenty of interesting problems and opportunities.

PROGRAMMERS PROGRAMMER/ANALYSTS to £11,000

As the DP department grows, so will individual career prospects. ICL ME29 experience desirable—Range COBOL essential. Must have at least 2-3 years' experience in a commercial environment. MTS or IDMS an advantage.

Food for thought

•High salaries •Outstanding career opportunities
•State-of-the-art systems •Really interesting, varied work

Get your teeth into food...now

Ring Clive Sexton on 01-734 9723 (or 01-399 9725 evenings/weekends) to talk about these juicy jobs.

(3027)

CTR Computer Technology Recruitment Limited

as advanced as the industry we serve

Triumph House, 189 Regent Street, London W1R 7WD.

INTERNATIONAL SALES PLANNING/FINANCIAL MODELLING £35,000+Car

You are a sales professional who has enough energy to spend 50%+ of his time overseas and still generate enthusiasm in others.

Reporting directly to the M.D. you will receive a high base salary and commission on all sales of FCS-EPS on the System 34's and 38's worldwide. You could also enjoy the substantial tax benefits which accrue from working outside the U.K.

Our client is a U.K. company which specializes in the design, development and implementation of systems for the IBM System/34 and /38 marketplace. Its Business System/34 and Business System/38 comprise the most comprehensive range of program products available.

In accordance with this philosophy of excellence, the company has developed, and has world-wide rights to market that version of FCS-EPS which runs on the IBM System/34 and System/38 range of computers.

We are looking for a young successful and ambitious Salesman, with experience selling financial planning and modelling systems. His role will be to stimulate sales of FCS-EPS on the IBM System/34 and System/38 range through the existing network of EPS sales offices in the U.K., Continental Europe, USA, Canada, Far East, Middle East and Australasia.

The company is young, successful, growing rapidly and in a position to offer long-term career opportunities. With a product which is one of the most respected and widely used business planning and modelling systems in the world, selling into a market of 100,000 installed System/34 and System/38's which is increasing daily; this must represent one of the most attractive sales opportunities available.

For further details phone Kevin McCourt or write enclosing full C.V. Interviews will be held in Reading and Central London.

MCL

McCOURT COUSINS LTD, 27-29 Greyfriars Road, Reading, Berkshire. (3002)

Tel: Reading (0734) 595346

SOFTWARE ENGINEERS

N. Hants **£8.5K-£12.5K**

Solatron is a market leader in two sophisticated market sectors; Radar Simulation and Industrial Systems. Though very different in content both require similar attributes, namely the ability to innovate in a practical environment, usually against the clock. Because each project is unique there is a high intellectual challenge and the opportunity to exercise flair in a variety of situations.

The necessary skills required for the positions outlined below are experience of software development in a REAL-TIME environment on PDP 11's using RSX, CORAL and/or MACRO.

Software Engineers (Radar Simulation)

Increasingly complex radar simulators must ensure that navigators, air traffic controllers and military strategists are capable of dealing with any emergency.

Software Engineers (Industrial Systems)

Collecting and processing data effectively presents a unique set of problems which must be solved to ensure plants will operate at maximum efficiency.
Those are the tasks of the two divisions.

Professionals who really want to innovate, stretch their talents and who feel they are worth every penny of the £8.5K to £12.5K starting salary and benefit package (including relocation assistance) should apply to Keith Taylor at McCourt Cousins.

MCL

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Due to the increasing volume of work within their purchasing facility:

LAMBART COMPUTING

now require an

EXPERIENCED BUYER

to be responsible to the Operations Manager, based at our facility in Bourne End, Bucks.
Duties will include sourcing of computer equipment in the U.K. and overseas – setting-up of purchasing agreement with new suppliers – liaison with sales department on special purchasing deals – liaison with engineering department on stocking levels and quality control, etc.
This position demands appropriate purchasing experience and preferably, although not essential, a knowledge of DEC or DEC compatible equipment.
Salary will be commensurate with age and experience.

For further details please contact:

MRS. B. DANDRIDGE
LAMBART COMPUTING
UNIT 1
WESSEX ROAD
BOURNE END - BUCKS.
06285 27074

(3003)

UNIVERSITY OF LIVERPOOL

LECTURER IN COMPUTER SCIENCE
(revised advertisement)

Applications are invited for the post of Lecturer in the Department of Computer Science, which has recently been reorganised and is embarking on a major programme of development at undergraduate and post graduate levels.

Candidates should have postgraduate qualifications or equivalent experience in Computer Science, and may have research interests in any area of non-numerical computer science, but applicants with experience in the general area of data bases and expert systems, software engineering or robotics will be particularly welcome.

Salary will be on the scale £9,375 – £13,605 per annum.
(Note: This advertisement revises the salary applicable to this post. Applications already received are being actively considered and these candidates need not re-apply.)

Applications, together with the names of three referees, should be received not later than 28th March 1983 by The Registrar, The University, P.O. Box 147, Liverpool, L69 3BX. Tel: 051-709 6022, Extension 2096, from whom further particulars may be obtained. Quote Ref: RV/695. (2917)

CITY OF LONDON POLYTECHNIC COMPUTING CENTRE

SYSTEMS PROGRAMMER DISTRIBUTED SYSTEMS

A programmer/analyst is required to join a small team concerned with the evaluation and installation of machines for a new distributed computer system. The system will comprise a number of minicomputers interconnected through an X25 packet network, accessed by terminals and microcomputers as a vertically integrated computing resources service which will be gradually phased out. Some work on the old systems may be required.

Candidates should have experience of working at assembler level, principally on operating system or communications utilities and in any case have a good working knowledge of operating systems and packet based communications.

Salary £9,885-£9,194 including London Weighting, starting point depending on age, qualifications and experience.

Conditions of service include 21 days' annual leave rising to 26 contributory pension schemes and a 35-hour week which can be worked in such a way as to provide an additional day off every month.

For further details and an application form, please do not telephone but write on a postcard to the Staff Records Officer, City of London Polytechnic, 117 Commercial Road, London E1 2BX, quoting ref. no. 83/58. (2918)

London Borough of Hounslow
Hounslow Borough College
Department of Business Studies

Lecturer I in Computing

To teach computer programming (BASIC and/or COBOL), data processing and business numeracy to BEC National and General levels.

Salary £6,969-£9,267 plus LW

Application forms and further particulars from the Principal, London Road, Isleworth TW7 4HS on receipt of SAE (large). Closing date 10 days from appearance of advertisement. (2947)

LONDON BOROUGHS OF BRENT AND EALING
JOINT COMPUTER INSTALLATIONS

SYSTEMS ANALYST

Acton Town Hall. £10,101-£11,160 pa incl

To work in a Project Team developing and maintaining computer systems, responsible for detailed systems investigation and design, production of technical specifications, system test planning and support of implementation and operational running. Each project team is headed by a project manager and is responsible for designated areas of the council's activities.

The installation has an IBM 3031 running under VM and DOS/VSE. Software includes CICS, DL/1 Easytrieve, on-line Librarian, APL, MANTIS, etc.

In approved cases the Council offers 100% removal expenses, 80% of legal and estate agent's fees, up to a maximum of £920 and a lodging allowance.

Please quote reference: 019 PD. Closing date: 8.4.1983.

Application forms available from: The Personnel Section, RA202, Town Hall Annexe, Ealing, London, W5. Tel: 01-579 2424 ext 3260.

Out of hours answer service on 840 1995
All salaries are inclusive of London Weighting Allowance.
All posts are open to male and female applicants unless otherwise stated.
Special consideration will be given to disabled persons whose qualifications and/or experience are relevant to the post for which they apply. (2947)

Analyst/Programmer
for Data Administration Group
City of London £11-£12,000

Manufacturers Hanover Trust Company is the fourth largest American Bank, with headquarters in New York and facilities in 40 countries world-wide.
A new international banking system is being developed here in London, in the following environment:

IBM 4300
CICS/DL1
VM/CMS
DOS/VSE
VSAM

Structured programming is standard and training in these techniques will be given where necessary.

In our ideal candidate, we are looking for the ability to assume responsibility for all the Database aspects of a particular application (or applications).
We are also looking for a knowledge of:

Data analysis techniques
Database design
Database tuning
IBM Data Dictionary
Banking applications

and a thorough technical knowledge of DL/1.
If you come close to meeting the above, we should like to hear from you.

The salaries indicated are enhanced by generous banking benefits, including:

- **5% mortgage**
- **personal loans**
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- **non-contributory pension**
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- **free life assurance**

Please ring Chris Oakley to discuss briefly your career and to arrange for an early interview. If you prefer, then write to her at Manufacturers Hanover Trust Company, Queensbridge House, 60 Upper Thames Street, London EC4V 3EN.
Tel: 01-600 5666 Extn. 3533.

(3007)

developing the banking systems of the future

Office Automation Boom

Our client is one of the most successful and rapidly expanding British Software houses.

Having recently landed a hotly contested major project for a top Hardware manufacturer, they are currently seeking people with **2 or more years' programming experience** on any commercial Mini or Mainframe to work on the design and implementation of a wide variety of Systems.

Specific experience of financial and/or insurance applications would be particularly useful.

In any case, Starting Salaries are up to **£12,000** and prospects for advancement will be limited only by your ability and commitment.

If you have the right background, are highly self-motivating with good interpersonal skills and are looking to optimise your career possibilities, contact us now quoting Ref 6495.

Lloyd Chapman Associates
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(3008)

FLY AWAY TO THE USA
UP TO $45,000
PL1 or COBOL or BAL

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LIVE IN THE SUNBELT OR VIBRANT NEW YORK

Are you flexible? Are you creative? Work on sophisticated projects for world-famous companies (re-training in CICS, IMS if necessary)

MUST HAVE DEGREES OR FIVE YEARS PROGRAMMING EXPERIENCE

Terrific conditions and benefits – choice of location

Call Lesley Thompson – 01-836 6775

COMPUTER PERSONNEL INTERNATIONAL
30-32 Southampton Street, London, WC2

(3037)

CONTRACTS

UK

MINI CORAL SCIENTIFIC/ENGINEERING	ANALYST/PROGRAMMER	IMMEDIATE START	DORSET/NORTH WEST
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VAX VMS TOTAL COBOL	ANALYST/PROGRAMMERS	IMMEDIATE START	SCOTLAND
PDP RSX 11 M RTL2	PROGRAMMER	IMMEDIATE START	MIDLANDS
UNIVAC 1100 EXEC 8 DMS COBOL	PROGRAMMERS	APRIL START	NORTH WEST
MAI BASIC 4	PROGRAMMERS	APRIL START	MIDLANDS
MOTOROLA B 800 BASIC/ASSEMBLER	PROGRAMMER/ANALYST	IMMEDIATE START	SCOTLAND
IBM 4300 MVS COBOL CICS DL/1	ANALYST/PROGRAMMER	APRIL START	MIDLANDS
PDP RSX 11 D MACRO 11	ANALYST/PROGRAMMER	IMMEDIATE START	NORTH EAST
ICL VME TPMS DDS IDMSX	DATA BASE DESIGNERS	APRIL START	NORTH WEST
IBM 4300 DOS/VSE	VM SYSTEMS PROGRAMMER	IMMEDIATE START	NORTH WEST
IBM 303X MVS STAM	SYSTEMS PROGRAMMER	IMMEDIATE START	NORTH WEST
IBM 303X MVS COPICS, CICS, DC/1	ANALYST/PROGRAMMER	APRIL START	MIDLANDS
PRIME 750 PRIMOS	SYSTEMS PROGRAMMER	APRIL START	NORTH WEST
VAX 11/780 VMS	SYSTEMS PROGRAMMER	APRIL START	NORTH WEST
PDP MANUFACTURING EXPERIENCE	O+M ANALYST	IMMEDIATE START	MIDLANDS

OVERSEAS

UNIVAC 1100 DMS TIP COBOL	PROGRAMMERS	IMMEDIATE START	ALABAMA
IBM 4300 COBOL ASSEMBLER	PREFER PUBLISHING EXPERIENCE	APRIL START	NEW JERSEY
IBM SYSTEM 38 RPG III	ANALYST/PROGRAMMER	IMMEDIATE START	NEW YORK
IBM SYSTEM 34 RPG II	ANALYST/PROGRAMMERS	MAY START	NEW YORK STATE
IBM OS PL/I VSAM	ANALYST/PROGRAMMER	MAY START	NEW YORK STATE
PDP RSX 11 M MACRO 11	ANALYST/PROGRAMMER	APRIL START	BRUSSELS
IBM 370 IMS DB/DC PL/1 ASSEMBLER	SYSTEMS PROGRAMMER	APRIL START	NEW JERSEY
ICL SYSTEM 10/9/SYSTEM 25 ASSEMBLER	ANALYST/PROGRAMMERS	APRIL START	LOS ANGELES
UNIVAC 90/30 COBOL	ANALYST/PROGRAMMERS	APRIL START	LOS ANGELES
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Knight Programming Support Ltd

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Adamson House, Shambles Square, Manchester M3 1RE 061 833 9341

Computing Services Association

Development & Consultancy
Real-Time Software Systems
c£15K Plus CAR

Have you skills in 2 of the following?

- ★ ***Real-Time Systems***
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- ★ ***Database Design***
- ★ ***Simulation***
- ★ ***Command & Control Systems***
- ★ ***Distributed Processing***
- ★ ***Process Control***

Our client is a highly successful Division of an electronics-based multi-national Corporation. The Division, based in Sunbury-on-Thames provides task management and technological service to a wide range of large clients, which include Government Departments and local authorities.

Due to expansion of its systems activities, they now require to augment their Software team by recruiting two Software Engineers.

The successful applicants will have a direct responsibility for software development, consultancy and the provision of sales support for projects exceeding £¼ million value. It would be unlikely that an individual without experience in at least 2 of the technical applications listed opposite would be equipped to meet the demand of these positions.

Successful applicants will be working on several state-of-the-art communications handling systems which are currently being implemented on DEC VAX and DEC PDP11 series minis under VAX VMS and RSX 11. A sound background in DEC real-time operating systems is essential, together with fluency in MACRO 11, CORAL 66 and ideally PASCAL.

The positions offer candidates an ideal opportunity to develop their man management and project management skills in a successful and expanding software services environment.

If you feel ready for the challenge, then telephone **Alan Carnell** on **01 935 0671** (24 hour answering service) or 01 637 8795 (evenings to 9.00 pm). Alternatively you may submit a Curriculum Vitae to the London office.

Technical, Sales & Management Appointments

SCR
Specialist Computer Recruitment Ltd

SOUTH: James House, 46 James Street, London W1M 5HS, 01-935 0671/486 0461
MIDLANDS & INTERNATIONAL: 35-37 Great Charles Street, Queensway, Birmingham B3 3JY, 021-236 3781
NORTH: International House, 84 Deansgate, Manchester M3 2ER, 061-833 0427
BELGIUM: Avenue Louise 327, Boite 4, 1050 Bruxelles, 010 322-640 7151/71
HOLLAND: Willemsparkweg 92, 1071 H.M. Amsterdam, 010 3120-760947

(3010)

PROGRAMMING OPPORTUNITIES

IBM PROGRAMMERS HERTS/BUCKS c£6,500
On line development using COBOL, candidates must have a minimum of one year's experience preferably DOS/VSE other good OS or MVS people considered.

MOVE TO VAX BUCKS/CAMBS c£8,000
Small installation utilising VAX super minis are seeking commercial programmers ideally with 18 months' COBOL or BASIC PLUS to work in S/C or ACCOUNTS based systems.

MICRO PROGRAMMERS HERTS c£8,500
Leading systems house are seeking good commercial people with varied applications background preferably ACCOUNTS or S/C experience languages NOT IMPORTANT.

PROGRAMMERS (ICL OMAC 29) HERTS/NORTHANTS c£8,500
Candidates must have two years' ICL COBOL with some exposure to ME 29 using OMAC 29. Software house/N user environment.

DEC JUNIOR PROGRAMMER MIDDX £7,000-£8,500
Excellent opportunity to join a rapidly expanding systems house in development of application for the leisure industry on PDP II and VAX. 18 months to two years experience required with PDP II and HT II preferably some DIBOL.

REAL TIME PROGRAMMERS MIDDX c£9,000
Multi-national organisation developing office auto system, seeking people with good Real Time experience. System currently using VAX as a host and is eventually to be based on INTEL 8086s using UNIX & C for which training will be available.

IBM PROGRAMMER MIDDX £8-£9k
Large retail organisation developing financial and distribution systems on IBM 4341 require candidates with at least two years' COBOL experience preferably under OS/VS1.

HONEYWELL PROGRAMMER MIDDX c£10,000
Leading international organisation involving HIGH TECH products for domestic office use, is seeking people with a min of two years' COBOL or DPS 8 or other HONEYWELL mainframes to take part in development and support.

For further information contact:

HOWLETT COMPUTER SERVICES
FREEPOST
Leighton Buzzard, Bedfordshire LU7 7BR.
Tel: 0525 382565 (3 lines) or 029 672 221 evenings/weekends

(3046)

HOWLETT COMPUTER SERVICES

QUEEN MARY COLLEGE
University of London
PROGRAMMING AND APPLICATIONS SUPPORT DISTRIBUTED ARRAY PROCESSOR SUPPORT UNIT

The Unit is part of the QMC Computer Centre providing a national service for users of the DAP. Housed in special purpose-built accommodation, the Unit fosters research on the use of parallel machines, produces software, advises users and acts as a focus of information on parallel machines. A PROGRAMMING CONSULTANT is sought to assist in this work, ideally with at least 2 years experience in scientific/technical computing and interested in helping others solve their problems on a new type computer.

Initial appointment to 31 July 1985 in range £6,276-£9,570 p.a. + £1,158 London Allowance. Application forms and further details available from The Secretary, Queen Mary College, Mile End Road, London, E1 4NS, to be returned by 30 April. (3028)

BOLSOVER DISTRICT COUNCIL

FINANCE DEPARTMENT

ASSISTANT SYSTEMS ANALYSTS/PROGRAMMER

Based at Dale Close, Mansfield

Salary Grade AP2/3: £5,352-£6,693

To assist in the provision of an efficient and effective service in relation to the computerisation of the Council's financial, technical and administrative responsibilities.

Further details and application forms available from:

Personnel Section
100 Chesterfield Road South
Mansfield
Notts.

Tel: Mansfield 34171 ext. 56

Closing date 6th April, 1983

(3018)

SENIOR RECRUITMENT CONSULTANT
(Manager Designate)
£25K (inc) + Car

We are ideally looking for an experienced recruitment professional who is seeking the challenge of organising a new division. We are also prepared to consider someone with a first-class sales career record who has a sound knowledge of the Computer industry. He or she will probably be in their mid- to late-twenties and must be capable of working with the minimum of supervision and naturally be totally self-motivated.

The rewards are a negotiable five-figure basic salary + 25% Commission, also an executive company car will be provided after a short probationary period. This is a genuine career opportunity that will most appeal to someone who has real ability but unable to use it in their present company. Future prospects include their involvement with the selection and setting up of sophisticated in-house computer system. Ultimately it is envisaged that a directorship will be offered.

For more information and a strictly confidential discussion, telephone the Managing Director today on 01-439 1336 up to 7 p.m. most evenings.

(3018)

HEX[illegible]ON
Comput[illegible]vices

Computer Operator

Southwark, SE1 **£6806 – £8642 pa**

Applications are invited for the post of Computer Operator to assist in the operating of the Regional general purpose computers and associated equipment. At present the mainframe computers are an ICL 2960 operating under DME and an ICL 2966 operating under VME/B.

In addition there are ICL ME29 and ICL 7905 computers and, shortly, a TEXAS system. There are also a number of small computers in use for Data Preparation and User applications.

Applicants should have a good general education to 'O' level standard and preferably one year's experience of operations on ICL VME/B, DME or other ICL operating systems. Applicants with an aptitude for this type of work, with the right qualifications, minimum 4 'O' levels, and preferably aged not more than twenty five years will be considered for training.

An average of 37 hours per week is worked from two shifts Monday to Friday at present. Overtime working is necessary at times of peak work load.

Applications should be sent to the Personnel Officer (Recruitment), CEGB, South Eastern Region, Bankside House, Sumner Street, London SE1 9JU giving full details of experience and qualifications and quoting vacancy number 1024/83CW to arrive no later than 8 April 1983.

(3022)

Central Electricity Generating Board
SE Region

Management Consultants

Systems and Information Technology

The P-E Consulting Group's work in computer systems, office automation and information technology continues to expand rapidly and we are recruiting additional consultants to help our clients with:

- Feasibility studies
- Policy and strategy studies
- Specification, selection and implementation of systems
- Project Management

Consultants will be based at our Egham office but will be required to work on their own initiative at our clients' premises.

We are seeking high performance professionals, aged around 25-35, and invite applications from numerate graduates, male or female, able to demonstrate the appropriate experience and track record.

An excellent remuneration package is offered, including car, non-contributory pension and profit share.

Please write in confidence with full CV or telephone (24 hour answering service) quoting reference A/377/CW

2986

The P-E Consulting Group Appointments Division
166 Piccadilly, London W1V 9DE Tel: 01 499 1948

RPGII PROGRAMMER

Circa £8K + bonus & L.V.s

Required to join a small team operating an IBM System 34. Some systems analysis experience and/or GFAS/DMAS knowledge advantageous.

Contact Tony King. Tel: Dorking (0306) 886688

CROXTON + GARRY LTD. Curtis Road, Dorking, Surrey

(3011)

CONTRACTS

SENIOR PROGRAMMERS CENTRAL LONDON

IBM OS/MVS ADABAS/NATURAL Preferably with MARK IV

Required Early April and June

Fissions Limited
138 Alexandra Road
London SW19 7JY
Tel: 01-947 9544

(3038)

Experienced SYSTEMS PROGRAMMER

with substantial assembler programming experience and a comprehensive knowledge of commercial data processing systems and applications.

This position offers an interesting and challenging career opportunity with a small but successful company specialising in character recognition equipment and systems.

Negotiable five figure salary, company car, plus substantial fringe benefits and a pleasant working environment.

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Nottinghamshire
Tel: 0909 477272

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Computer Centre

EXPERIENCED SHIFT OPERATOR

To work on DEC10 and VAX machines at the Polytechnic of Central London. Two shift system with overtime opportunities, good salary with opportunity to join expanding Innovative Computer Centre. Good standard of education, ability to use own initiative and work under pressure are essential requirements. Day release opportunities could be available to successful applicant.

Application form and further details available from Establishment Office, PCL, 309 Regent Street, London W1R 8AL. Tel: 01-580 2020 ext 212. Closing date: Friday, 8th April.

(3026)

your appointments register

Programmers

NCR/IBM/COBOL		**to £14K**
Insurance · Banking	London · H. Counties · N. Eng.	
COBOL/FL1/OS/CICS/IMS		**to £13K**
Commercial	H. Counties · Midlands · Manchester	
HEWLETT PACKARD		**to £9K**
Commercial Accountancy		Hampshire
HONEYWELL		**to £12K**
Systems Programming experience		Middlesex
DEC/HP/WANG/DG		**to £12K**
Basic · Cobol		Berks · Surrey
IBM/RPG2		**to £12K**
Financial/Insurance		Home Counties
IBM		**to £16K**
System exp.		Essex
ICL/VMEB or K		**to £11K**
Financial		Surrey
IBM/UNIVAC/COBOL		**to £12K**
On-line/Database		Surrey
NCR 8200		**to £14K**
Financial		SW LONDON

Analyst/Progs

BURROUGHS/COBOL		**to £14K**
Commercial		Surrey
IBM 34/38		**to £15K**
	London/Home Counties/North	
IBM/UNIVAC/ASSEMBLER		**to £12K**
On-line/Database		Surrey
IBM/COBOL		**to £10K**
		Scotland

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APPLICATIONS ENGINEER		**to £14K**
Systems/Peripherals		Based N. England
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		Nationwide
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		UK + Europe
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		Home Counties
OPERATORS		**to £7K**
	London/Surrey/Berks	

Systems Analysts

IBM/ICL		**to £12K**
Stock Control/Commodity Control		London
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Real time · Modelling		Man · Essex · South West
IBM/BURROUGHS		**to £15K**
Commercial Accountancy		London/Surrey/Manchester
IBM		**to £15K**
Insurance/Financial		W. Sussex
ICL		**to £12K**
Pensions		Surrey
IBM/ICL		**to £12K**
On-Line		Croydon

Software Engineers

CORAL/PASCAL/MASCOT/C		**to £13K**
Communications	Glos/Hants/Sussex/Midlands/Manchester	
FORTRAN		**to £12K**
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MILITARY SYSTEMS/RADAR		**to £11K**
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Telecomms · ATE	Surrey/London/Kent	
PROCESS CONTROL/INDUSTRIAL AUTOMATION,		**to £13K**
Real Time/Petro Chemical Industries		Yorkshire
HP3000/INTEL		**to £12K**
CAD/CAM/ATE		Home Counties
CAD/CAM		**to £12K**
Military		Surrey

Snr Appointments

PROJECT LEADER		**to £15K**
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Military/Defence		Berks
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PROJECT MANAGERS		**to £15K**
On-line/Database		Surrey
CONSULTANT		**to £15K**
Commercial Application		Croydon

You can be sure of hearing about many opportunities like these, U.K. and abroad, when you make Sloangate your first choice. Take the next step in your career with us!

telephone 01 549 9236

Sloangate The Appointments Register

SLOANGATE LIMITED
214 KINGS ROAD
KINGSTON-UPON-THAMES
SURREY KT2 6HX

(2988)

ICL OPERATO

Changing to a London brewery with ICL 2960's wi enjoy c.£6500 plus all the benefits!

Resulting from internal promotions, one of the mair breweries has vacancies for computer operators.

Current hardware includes twin ICL 2960 mainframes under GEORGE IIS with a five day week, three shift sy being worked.

Ideally you will offer upwards of 18 months operating experience gained on ICL 1900 or 2900 mainframes using GEORGE IIS, any exposure to ATLAS tape library systems would be advantageous.

Traditionally, breweries have always offered above average conditions of employment – our clients are no exception, for in their purpose built West London datacentre they offer an excellent subsidised restaurant together with separate rest area offering a range of recreational facilities plus, of course, free beer!

Perhaps, more importantly a proven policy of training enables employees to develop their careers further.

For further information, including a data sheet describing the brewery's current computer set-up, please contact SCOPE quoting Ref: CW76R.

(2983)

SCOPE SCOPE PERSONNEL SERVICES LTD
19 Park Street,
Croydon, CR0 1YD.
01-680 5920

PROGRAMMING OPPORTUNITIES WITH GOODYEAR FRANCE

We are the world's largest manufacturer and distributor of tyres and have a major plant installation in Amiens.

We are currently looking for Analyst/Programmers to work in the Company's head office in Paris. Successful applicants will have the ability to contribute to Systems Design and Programming involving major business projects with COBOL. Experience with H.P. 3000 would be an advantage. Proficiency in French is essential.

These appointments offer real career opportunities, a good, negotiable salary and fringe benefits including life assurance and contributory pension scheme. The Company will provide substantial assistance with relocation expenses.

Applications should be made in writing to
Mr. J. M. Bradshaw,
Personnel Manager UK,
The Goodyear Tyre and Rubber Co (GB) Ltd.,
Bushbury,
Wolverhampton WV10 6DH.

3014

SNR SYSTEMS DESIGNER
(£9404-£11,434 p.a.)

PROGRAMMER/ANALYST
2 Posts (£7404-£9025 p.a.)

An opportunity has arisen for well qualified systems and programming staff to join the Computing Department of Grampian Health Board.

A full range of applications, covering financial, administrative and medical aspects of the Board's activities, are currently run on an installation of two ICL 2904. In the later half of 1983, it is expected that this will be replaced with an ICL 2966, which will initially run under DME with a move to VME early in 1984.

Applicants for the Senior Systems Designer post will have at least 6 years experience in computing, and will have held design responsibility for at least one major application. This is a permanent post.

Programmer/Analysts will have at least 2 years experience in programming, and will be able to show an aptitude for Systems Analysis work. One of these posts is permanent, and the second post is for a period of 3 years.

Benefits:
- ★ Cash allowance for special experience.
- ★ Flexible working hours (37 per week).
- ★ On line terminals for program development.

For further details, contact Mr C. Kite, at Grampian Health Board Computing Centre, Westburn Road, Aberdeen, Tel: (0224) 681166. Completed applications forms should be returned to the Area Personnel Officer, Grampian Health Board, 1 Albyn Place, Aberdeen by April 8th 1983. (3008)

UMIST
RESEARCH ASSISTANTS

Applications are invited from computer scientists with a theoretical bias or mathematicians with programming experience for two Research Assistants to work on the SERC funded project "Software Tools for the Construction of Verified Software". The persons appointed will develop an implementation of the algebraic specification language OBJ and an associated proof checker. Implementation will be in Pascal on the groups Perq/Unix/Cambridge Ring computer systems. Knowledge of one or more of the following areas would be an advantage - program verification/specification, algebra, functional programming, logic, system software. The appointments will be for three years.

Salaries will be according to age and experience in the range £5660-£11105 per annum.

Further information can be obtained from Robin Gallimore (ext. 2260) or Derek Coleman (ext. 2941) on 061-236 3311, to whom applications should be sent as soon as possible. Please quote reference COM83/BC.

(3034)

oxford polytechnic
COMPUTER CENTRE

DEPUTY HEAD OF COMPUTER SERVICES

A new and challenging post of Deputy to the Head of Computer Services has been created to assist with the management and development of computer services in the Polytechnic.

Applications are invited from well-qualified and experienced computing professionals, who have a number of years' experience in management and software development.

Salary scale: Principal Lecturer: £11,931-£16,018.

Application forms and further particulars can be obtained from: Mrs Judy Blakey, Administration Office, Oxford Polytechnic, Headington, Oxford OX3 0BP. Tel: Oxford 64777.

(2988)

PROJECT LEADER/ANALYSTS
To £14K + CAR

Our client is an expanding Commercial Systems House based on the South Coast, specialising in Real Time Mini-Computer applications.

They require Project Leader/Systems Analysts to manage consultancy assignments in LONDON and at their own South Coast offices.

Candidates will be aged 28-40 and will have already gained 'front-line' experience in Systems Management, ideally in a Systems House environment. Candidates must be capable of aiding the Customer to produce his S.O.R.; designing the system and managing the implementation team.

(3016)

INTEL

APPLY TO:
INTEL PERSONNEL
Regency Road, off West Street,
Brighton, East Sussex BN1 2RH.
Telephone: BRIGHTON 737183/4

INTEL

Nene College Northampton

School of Mathematics, Management and Business Studies

Applications are invited from graduates (or equivalent) for the following post, available immediately or with effect from September 1st, 1983.

Salary: Burnham FE scales.

Lecturer I/II in Computing

An ability to teach in any of the following areas would be an advantage: Systems Analysis; Database Design and Implementation; Programming; Management Information Systems.

Further information and application forms from:
The School Secretary, School of Mathematics, Management and Business Studies, Nene College, Moulton Park, Northampton NN2 7AL (Telephone 0604 715000, ext. 268).
Closing date: April 15th, 1983.

(2978)

Programmer/Analyst

WANG's success as a computer manufacturer is based on its ability to constantly position itself in the market place as a leader in office automation technology.

Our rapid expansion provides the opportunity for a Graduate, with a minimum of three years' programming experience, to join us at our West London European Support Headquarters.

While your primary responsibilities will be to produce programme specifications and to write COBOL programmes, you will also be given the opportunity to act as a Systems Analyst and Project Leader on certain projects.

You will be expected to work independently and exercise individual judgement. Knowledge of business systems is highly desirable.

The position offers considerable scope for advancement, and career development.

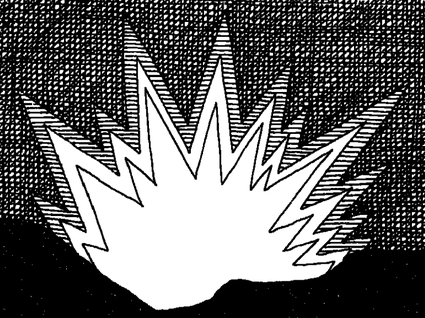
An attractive salary and benefits package will be offered to the successful applicant.

Interested applicants should send full CV, to: Marilyn Gately, WANG European Division, 661 London Road, Isleworth, Middlesex TW7 4EH.

WANG
THE OFFICE AUTOMATION COMPUTER COMPANY

SOFTWARE ENGINEERS

A shot in the dark



or intelligent guidance?

In the fast-moving world of intelligent guided weapon systems, our client's high-integrity software has a definite edge on the competition. Which is why they can offer you a career that's really worth aiming for. As a software house, they are capable of setting their own ambitious targets, and are presently working their way through a well-planned research and development programme of new products and design methods.

With the new buoyancy being experienced in this volatile market, their project teams are expanding to meet the pressures of increased worldwide demand – and accelerated progress.

The latest VAX systems have been introduced, together with the most powerful real-time minicomputers currently available. This dramatically enhanced capability signals important openings for experienced Software Engineers at various levels.

In all cases you should have a degree level qualification in a science, engineering or computer science field. Preferred experience is either VAX with CORAL and MASCOT, or real-time simulation/CAE. A considerable variety of interconnecting projects are always under way at any one time, so interdisciplinary communication skills are as essential as your technical expertise

Consultants c. £16K

With at least 10 years experience in developing significant real-time software and/or support environments, you will be expected to produce both conceptual and practical design solutions as well as directing a number of software engineering groups. Reference W756/MB

Project Leaders c. £13K

Operating at conceptual design level, you'll need to be a natural leader with in-depth expertise in at least one software specialisation (real-time software design, simulation, etc.) built up over 8-9 years' professional involvement with both high and low level programming techniques and languages. Reference W755/MB

Team Leaders c. £10K

Working to clearly-defined functional requirements with a mixed team of engineers, you will design, develop and prove real-time software at group or individual module level. At least 3 years' appropriate experience is required, using CORAL and at least one other language. Reference W754/MB

In addition there are a number of vacancies for **Software Engineers/ Designers**, up to Project Leader level, for real-time simulation, requiring appropriate experience on SEL/VAX and FPS array processors. Reference W758/MB

Also **Software Engineers** at various levels for systems programming on CAD/CAE graphic systems and local area networks with experience on PDP11 (RSX11M) or VAX (VMS). TI990 or CV experience would be useful. Reference W757/MB

Positions offer fully-negotiable salaries, and a first class benefits package including a generous contribution to the expenses of relocating to this pleasant part of the northern home counties.

For further details, interested applicants should write or phone Mike Beer at OCC Computer Personnel. Quote appropriate reference.

01-242 9356

24 hour answering service

occ computer personnel

Recruitment Consultants, 16 Bedford Row, London WC1R 4EB

A Shining Example of Success

Our Client, a British Company, is a shining example of success through innovation. In one year it has become one of the market leaders in the field of microcomputer systems. Significant future growth will involve the enhancement of the design and development capability to meet the requirements of current and new projects. Products are based on a variety of microprocessors including 6809, 68008 and 8088.

The Company has recently moved to purpose built premises and is close to pleasant rural/coastal surroundings. Housing in the area is both attractive and low priced.

Development Manager

£15,000 p.a. Car

Candidates for this senior post should have several years experience of leading a number of project teams in a fast-moving, commercial design development environment. In addition to a thorough technical understanding of microprocessor techniques and applications the post calls for well developed management and administrative skills and above all the ability to meet targets.

Software Systems Manager

£15,000 p.a. Car

This function will take responsibility for the management of an expanding Software Group. It requires man management and communication skills of the highest order. Applicants should also have considerable experience of the application of high level languages and micro or mini operating systems. Future projects will be multi-tasking/multi-user and will require significant software support.

Project Leaders

£13,000 p.a.

Degree qualified applicants are required who have several years design and development experience embracing microprocessor based technology and applications. Specific experience of project control is essential and the Project Leader will be expected to provide technical guidance and leadership.

Technical Author

to £11,000 p.a.

Applicants will be qualified to degree of HND level and have both technical and literary skills. Considerable liaison with the development group is envisaged to produce a wide range of technical and product literature and operating manuals. A good appreciation of microprocessor techniques is required.

Development Engineers

c. £10,000 p.a.

A number of degree qualified engineers are required having a minimum of 2 years experience of circuit design for micro-based equipment and peripheral devices.

Programmers

to £11,000 p.a.

Applicants should be degree qualified and have considerable experience of application software on micro based systems and programming in Assembler, C, PASCAL or a similar high level language.

The Company offer excellent career prospects and fringe benefits. A comprehensive relocation package is available where appropriate.

Please apply providing a full C.V. to Barrie Witt, by writing to the address below. Further information or an application form may be obtained by telephoning him on 0905 611512 during office hours or 06845 66477 evenings and weekends.

Computer Personnel & Executive Development Associates Ltd.
Old Bank House, Bank Street,
Worcester WR1 2EW.

Tel. 0905-611512

Dol. Lic No MI387

Software Consultancy and Development

Middlesex

£15K to £19K

Car

Relocation

Only people who have attained a very high level of applications experience in their particular fields will be of interest to us.

People with experience in **MANUFACTURING, GENERAL COMMERCIAL, FINANCIAL, BANKING** and **CONTROL SYSTEMS** on micro, mini or mainframe computers, who can function with great diversity of role, from pure consultancy to project management should apply.

You will know my client company by name and can be assured it is synonymous with the very best in systems software and computer technology.

Contact, in confidence, Digby Dyke, Managing Director, on 0905 611512 office hours or 06845 2210 evenings and weekends, or write to the address below.

Computer Personnel & Executive Development Associates Ltd.
Old Bank House, Bank Street, Worcs. WR1 2EW Tel.: 0905-611512

DRG BUSINESS MACHINES

Superb opportunities now exist for top quality engineers to join this fast-developing Company, which is part of the international organization, The Dickinson Robinson Group. DRG Business Machines, with its headquarters in Weston-super-Mare in the West Country, offers a wide range of computer products and applications software, through its Systems, Peripherals and Supplies divisions. In continuance of the Company's commitment to providing the highest levels of customer support, the following appointments are to be made.

Technical Support Engineers

Weston-super-Mare

As a DRG Technical Support Engineer, your responsibilities will include the evaluation of potential new products, the training of Field and Bench Engineers, product documentation, test specifications and schedules, assistance with customer queries, troubleshooting, and pre- and post-sales support. Two engineers are now required for the following:-

DISKS and PRINTERS

You should have in-depth experience of floppy and winchester disk technology, ideally with the additional experience of machine code and/or assembly programming, and the ability to design hardware and software required to operate disk products successfully. Ideally, you will also have 8085 and Z80 microprocessor experience, a knowledge of standard printer inter-facing techniques, and familiarity with matrix, daisy-wheel and line printers.

SYSTEMS and VDUs

For this appointment considerable experience is required of computer systems employing both 8 and 16 bit multiprocessor technology, with multi-tasking, multi-user facilities. Machine code or high level programming experience would be an advantage.
Considerable experience of VDU circuitry, ideally based on the 8085 chip, is especially necessary. Colour graphics experience would be useful for future products.

Field Service Engineers

Leeds/North East
Southampton/South West

As a DRG Field Service Engineer, within an assigned geographic territory, you will be responsible for promoting good customer relations, customer support and service, on-site fault diagnosis and repair, and preventive maintenance. As a Senior Field Engineer, your additional responsibilities will include providing technical assistance to other engineers.
You should have sound experience of field service on mini/micro computer systems and peripherals, a good basic understanding of digital electronics and the ability to work to chip level.

Bench/Commissioning Engineers

Weston-super-Mare

As a DRG Bench/Commissioning Engineer, you will be responsible for in-house fault diagnosis, repair and overhaul of company products, test equipment and PCBs to component level, and other technically related functions. Also you will give assistance with the installation and commissioning of computers on customer sites throughout the U.K. You should have a good basic understanding of electronics and have experience of diagnostic procedures and test equipment.

For further information, or to apply for one of the above positions, all of which carry a competitive and comprehensive salary and benefits package, telephone me, Digby Dyke, on 0905 611512 during office hours, or 06845 2210 evenings and weekends, or write to me at the address below.

Computer Personnel & Executive Development Associates Ltd.
Old Bank House, Bank Street,
Worcester WR1 2EW.

Dol. Lic No MI387

Tel. 0905-611512

CALMA

Calma is a leading supplier of complex computer-aided design systems. We have vacancies for experienced computer field service engineers in the following areas:

SURREY, BERKSHIRE AND HOLLAND

Benefits include a company car, pension scheme, BUPA and life assurance

For further details please contact:
JANETTE CROUCH
at Calma's European Headquarters

CAMBERLEY (0276) 682021

(2968)

Founded in 1980, Shawdata is a computer services company with a reputation for providing quality solutions, on schedule, to a diverse client base. As part of a long-established £76m UK-owned group, we also provide a data processing service over a nationwide TP network to our parent group, using an ICL ME29 computer located at our group head office in Huddersfield. More recently, we have become a founder member of the successful ICL Traderpoint network.

The increasing demands being placed upon our services by both our parent group and our external client base require us to recruit experienced data processing professionals to enable us to respond positively to these demands. The individuals appointed will have the opportunity to make significant contributions towards the development of a number of major projects using amongst other things, Viewdata, On-line and Database techniques.

Project Leaders

(£8K-12K + Company car)
We are looking for a person experienced in the supervision of system development with a proven track record of successful implementations. As we specialise in developing effective solutions for ICL systems, at least 4 years' experience of ICL hardware and software will be required.

Analyst/Programmers

(£6K-9K + Benefits)
Applicants should be self-motivated individuals of a proven capability who can perform effectively in both in-house and external client environments. At least 3 years' Cobol experience is required, ideally with ICL equipment. Recent experience of ME29 hardware and software would be particularly relevant.

If the challenge of either of the above positions is of interest to you please send your cv to:

The Personnel Manager
Shawdata, 4 Rowley Lane
Fenay Bridge, Huddersfield
W. Yorkshire HD8 0JG

Shawdata MEANS ICL IN THE NORTH

SMR
Sales & Marketing Recruiters Ltd
A Sales and Marketing Services Company

SALES EXECUTIVES
Refresh The Parts Of Your Career Potential That Your Present Employer Cannot Reach!

Our client is one of the big international success stories of the computer industry, with a considerable reputation for quality and innovation. Their product range extends from large computer systems to micros, embracing a variety of state-of-the-art products in such areas as Distributed Data Processing and the Electronic Office. They are a large, successful, secure and progressive organisation that manages to sustain all the benefits of a small company environment; a down-to-earth operation with short and responsive lines of communication. Major new products come along with astonishing regularity and the company has just launched a major computer system that is years ahead of competitive offerings. The future looks very bright indeed within this thrusting organisation where actually achieving target within the first year of employment is a reality.

The company's next phase of expansion calls for the recruitment of experienced sales executives who have a substantial record of success in selling computer systems to industrial and commercial end-users or systems houses in any of the following regions:

SOUTHERN ENGLAND-THE MIDLANDS
NORTHERN ENGLAND-SCOTLAND

Induction training will include travel to the U.S.A. and the remuneration package includes a generous guarantee against commission earnings during the first year. On target earnings in 1983/4 are expected to be

£25,000 + COMPANY CAR

Our consultants for this assignment are Alasdair Scott (London and South) — 01-734 9776; and Roger Dodd (Midlands and North) — 05432 56812. Please quote reference SSB/033.

(2980)

LONDON & SOUTH
29 Oxford Street
London W1. (01) 734 9776

MIDLANDS & NORTH
Cathedral House, Beacon Street,
Lichfield Staffs. (05432) 56612

Answering Service after 6 pm and weekends
SALES TRAINING, MARKET RESEARCH, RECRUITMENT

EDP PROFESSIONAL

Progressive Audio and Hi-Fi distribution company based in Slough, seeks EDP professional with operating/programming experience to be responsible for IBM System 34. Sound knowledge of D/MAS or equivalent essential.

Salary c£9,000 plus substantial benefits package.

Write or telephone for an application form to:-

HARMAN (AUDIO) UK LTD.
Mills Street, Slough
Tel: Slough 76911

(2051)

Analyst/Programmer

IBM 3081 · BARPICS (CICS, D/L1)
From £8385 Basingstoke

We are a worldwide manufacturer and distributor of fine and speciality papers. The position is based at our modern Head Office in Basingstoke.

The successful candidate will assist the Project Leader to develop and implement IBM/BARPICS for a number of our UK production units. Some travel will be necessary.

Graduates with a manufacturing background are preferred, and experience with COBOL, CICS and D/L1 would be desirable.

We offer the usual big-company benefits, including flexible working hours, subsidised restaurant, non-contributory pension scheme, and help with relocation where appropriate.

For more details please contact Personnel Services Department at Wiggins Teape.

Wiggins Teape (UK) PLC,
PO Box 88, Gateway House,
Basingstoke, Hampshire RG21 2EE.
Tel: Basingstoke (0256) 20226 Ext. 3100.

WIGGINS TEAPE

(3012)

FIELD SERVICE ENGINEERS £8K++

A superb opportunity to join the leading manufacturer of prestige mini, supermini and systems. The company believes Engineers should lead Software and gives excellent training in Hardware, Software and Systems. Team environment, good prospects, travel options, steady management, etc, etc. London and Home Counties. Ref: EM 75.

WORKSHOP ENGINEERS £9K++

Minis, micros, peripherals, fault finding and repair, production test, assembly, inspection — just some of the areas our client has identified needs for quality in-house support. Hands-on experience preferred but also opportunities to enhance electronics experience.

STOP PRESS — London-based Operating System Tech Support Red Engineers wanted — to 12K + users.

Ring Mike 01-549 6441 (day) 01-394 2389 (evenings)

ab executive (kingston) ltd 01-549 6441 (24 hr) (3011)

LIVERPOOL INSTITUTE OF HIGHER EDUCATION
(Christ's and Notre Dame Colleges and S. Katharine's College)

LECTURER IN COMPUTER STUDIES

Applications are invited for the position of Lecturer in Computer Studies to teach courses within B.A. (Gen.) with Honours and B.Ed (Hons.) modular degrees. The person appointed will be required to teach at all levels of the subject, including in-Service courses for teachers. Topics covered include Programming Language Structures, Computer Architecture, Information Systems and Design, Software Design and Developments, and Digital Electronics.

Applicants should have a degree in a subject containing Computing as a major component and/or recent industrial or commercial experience. Salary on Lecturer II/Senior Lecturer Burnham Scale £8,856-£12,816.

Further details about the post are available from the Registrar, Liverpool Institute of Higher Education, Stand Park Road, Liverpool L16 9JD, to whom letter of application should be submitted by 18th April, 1983. (3026)

FOR **CLASSIFIED** ADVERTISING USE **DIRECT LINES**

RECRUITMENT CONSULTANCIES (01) 661 8787

DIRECT ADVERTISERS (01) 661 8080

SMR
Sales & Marketing Recruiters Ltd
A Sales and Marketing Services Company

SALES EXECUTIVES
ARE YOU UP TO SPECIFICATION?

In other words, have you proven your ability to:

* Sell computer systems in a creative manner?
* Negotiate knowledgably at director and shop-floor levels?
* Co-ordinate and motivate a sales team?
* Handle industrial and commercial applications?
* Produce an effective selling strategy?
* Deal with new and existing accounts?
* Qualify sales prospects perceptively?
* Consistently achieve sales objectives?

If so, you are the kind of salesperson whose career will benefit considerably from joining our client whose specification includes:

* Leading international computer manufacturer.
* Broad range of hardware systems.
* Major new product announcement imminent.
* Many powerful applications products.
* Considerable in-house training facilities.
* Very large user base.
* Overseas travel with 100% Club.
* Good prospects for advancement into management.
* Vacancies in SOUTH, MIDLANDS AND NORTH OF ENGLAND.
* Remuneration package includes car, pension, health insurance, etc.
* Target earnings around

£25,000

If these two situations have a significant degree of compatibility for you, contact us right away so we can arrange to meet and provide a more complete picture. Our consultants for this assignment are Alasdair Scott — South (01-734 9776) and Roger Dodd — North (05432 56812). Please quote reference SSA/033.

(2863)

LONDON & SOUTH
29 Oxford Street
London W1. (01) 734 9776

MIDLANDS & NORTH
Cathedral House, Beacon Street,
Lichfield Staffs. (05432) 56612

Answering Service after 6 pm and weekends
SALES TRAINING, MARKET RESEARCH, RECRUITMENT

CONTRACT SALES

Leading computer and peripherals maintenance company require reliable and hardworking Sales Engineers to promote and sell its services throughout the UK. A background in computer service and a knowledge of contract negotiation would be desirable. Basic salary plus commission, company car and other benefits should result in an attractive package.

Interested, please write to:

KI KSL

B. L. Brown
KODE SERVICES LIMITED
Station Road, Calne,
Wiltshire

A member of the Kode International Group

(3007)

FIELD ENGINEERS — EVERYWHERE

Our clients are leading manufacturers in their respective fields. All offer full training, security and the chance to work on state of the art kit

MICROS — LONDON, AVON, MANCHESTER
c £9K + car + O/T + BUPA

This company enjoys phenomenal growth with attendant career opportunities and highly rated kit of their own design.

MINIS — LONDON, H. COUNTIES, SHEFFIELD, DERBY
c £10K + S/B + O/T + car + BUPA

SUPER MINIS — "Top of the Tree" performance — Training in U.S. — full systems envolvement — early promotion.

Call KEITH WALLIS NOW to discuss the above on: (2949)

ALLTRONICS PEOPLE (AGY) 01-543 4844 ADV 1293

BOX NUMBERS

Box number replies should be addressed to:

Box Number .....

c/o Computer Weekly
Quadrant House, The Quadrant
Sutton, Surrey SM2 5AS

ICL COBOL ANALYST/ PROGRAMMERS
NORTH LONDON AND ESSEX
SALARY up to £11,000

To join an expanding, well-established software house. Knowledge of either DMS, ME29, 2903 preferable.

The successful applicant will be involved in liaison with customers on system design, programming and implementation etc. We are recruiting for both our Welwyn and Waltham Cross offices.

In the first instance please contact Maureen Parker on: Waltham Cross 33208. (2939)

N. STAFFORDSHIRE POLYTECHNIC
Faculty of Computing, Humanities and Education
Computing Services Unit

DEPUTY HEAD OF COMPUTING SERVICES (PRINCIPAL LECTURER)

Salary Scale £11,931-£13,290 (bar)-£15,018 p.a.

Duties of this post will include the day to day management of Computing Services at the Stoke group of the Polytechnic sites and assistance with Computing Services administration. The Deputy Head will also undertake teaching and tutorial work on computer management and related topics.

Application form and further details may be obtained from the Personnel Officer, North Staffordshire Polytechnic, College Road, Stoke-on-Trent ST4 2DE. Telephone (0782) 45831 ext 297.

Closing date for completed applications 11th April 1983. (3021)

CARTRANSPORT LIMITED

2 YEARS' PROGRAMMING EXPERIENCE?

Salary C. £7,330 to £8,790
at Leamington Spa

Cartransport Limited, Britain's leading specialist in car delivery, have developed and implemented unique, on line, operational and financial systems, utilising Honeywell Level 6 minicomputers linked to a nationwide network.

We are looking to recruit a programmer to join our small but forward looking management services department which is responsible for the design, development and implementation of all computer systems within the company.

Major responsibilities will include new projects work, enhancements of existing programs, as well as assisting with any day-to-day operational problems.

Applicants should possess two years' Screenwrite or similar database language. Experience in a Honeywell environment would be useful.

Cartransport Limited, being a subsidiary of the National Freight Consortium P.L.C., can offer attractive benefits such as negotiable salary dependent upon age and experience, profit related bonus, share purchase scheme, a contributory pension scheme and five weeks' annual holiday. Relocation expenses will be considered if applicable.

Applicants (male/female) please write or telephone for an application form to:-

Personnel Department, Cartransport Limited, Blackburn House, 1 Warwick Street, Leamington Spa CV32 5LW.
Telephone: 0926 30321 (3025)

SALES BIT
Quality of Management — 45

The art of effective advertising

THE sales manager has a variety of means at his disposal for generating new recruits: Word of mouth; own direct advertising; advertising via external consultants; agency candidates via external consultants; head hunting via external consultants.

Advertising is the most effective and widely used means of generating candidates. But many sales managers have finally abandoned advertising in disgust, after spending many thousands of pounds without achieving any success.

Successful recruitment is not achieved simply by putting an advertisement in the Press and awaiting a deluge of replies. Those companies whose own efforts fail, do so because they lack the flair and expertise of putting together the right copy and presentation, located in the right journal, and/or fail to give the kind of response, priority and follow-up that is necessary for any chance of success.

Note I say "any chance". No advertising, no matter how well conceived, can guarantee the desired results.

Here are some guidelines on producing successful advertising:

The presentation must be sufficiently eye-catching to offset the competition of adjacent advertisements. As a "rule of thumb" a browsing reader is unlikely to spend more than four or five seconds glancing across a page of advertisements — and that is how long you have to make contact with your potential candidate.

The key points of the job must be emphasised, bearing in mind the "four second test". The reader is typically interested in three factors: job function, location and earnings. If these are not sufficiently bold to grab the potential candidate your advertisement is likely to go unnoticed.

The main feature/benefits of the job should be highlighted. Any worthwhile job has something beneficial to offer and, more often than not, something "special" can be identified which can make the job more attractive than competitive opportunities. It is important to identify such elements and contain them within your advertisement. If one particular outstanding benefit can be identified, so much the better.

The copy should be the truth, the whole truth, and nothing but the truth. Over-ambitious claims about potential earnings can soon become a millstone around the sales manager's neck. Misleading job descriptions can quickly lead to considerable political and emotional hassles.

Such bold and emotive statements as "Excellent career prospects", "Earnings potential of £50,000," "Sales manager", must be avoided at all costs if they really mean "If you make a good impression here you will have as much chance of being promoted as the other 50 guys hoping for the same thing", "Our targets are twice as high as those of our competitors", "Of course you are a sales manager and you should not get depressed simply because you have no salespeople to manage".

Make no mistake, if the candidate cannot perceive the truth at the interview stage, he will soon get to appreciate it once he is on board.

Do not use a box number or hide the name of your company by using an advertising agency — as opposed to a recruitment agency. It gives the impression of being sneaky. Are you trying to hide something from your employees? Are you ashamed of your reputation? More importantly, salespeople are always worried about the possibility of applying to their existing employer by accident, to say little of applying for their own job.

Do state the precise job title, the location and the anticipated total earnings. If the latter figure is significantly more than the actual income of your average salesman then perhaps you ought to reconsider it.

Use the trade or Sunday Press. Computer Weekly and the Sunday Times are best in my opinion.

The cost of advertising is extremely high so it needs to be considered carefully. You may have to pay in excess of £50 per column centimetre in the national Press. The trick is choosing the smallest size that is big enough to catch the eye when surrounded by competitive advertisements.

Alan Williams

PUZZLE ANSWER

THERE are two Yellow faces, directly opposite each other.

		Yellow	
Green	Red	Blue	Pink
		Yellow	

Sales Engineer

Leading Colour Graphics Systems.

Sales to Educational/ Research Establishments, Architects. OEM's Systems Houses.

£20,000 + realistic earnings.

£16,000 guaranteed for first year.

2.3L Car.

Home Based Central England

UK Territory

This is a key position, giving you the opportunity to be instrumental in opening up the UK market for a leading range of high performance colour graphics systems.

You are offered the genuine career prospects and individual freedom inherent in working from home, reporting to the MD of a small privately owned company, whilst at the same time, benefiting from the backing of an Organisation that has operated throughout the UK for more than twelve years and established a successful track record and sound reputation in sales of high quality, competitively priced, peripherals and systems, with an impressive Client list comprising sophisticated users, OEM's and systems houses.

The Company is now delighted to have been appointed sole UK supplier of a market leader in colour graphics systems and it is to take full advantage of this situation and market the products via a specialist sales approach that the current opening exists.

Because the Company places great emphasis on specifically gearing systems to the customers requirements, you will thrive on total involvement in each sale and possess the necessary expertise, probably having moved into sales from a technical background, to modify software packages, write Client software and deal with necessary interfacing.

You will have enthusiasm for and knowledge of the possibilities afforded by the latest developments in colour graphics systems and be able to demonstrate tangible sales ability.

Practically you will live within easy access of the central motorway networks.

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Interviews in London, Birmingham or Manchester.

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Specialist Computer Recruitment Ltd

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35-37 Great Charles Street, Queensway, Birmingham B3 3JY
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NORTH
International House, 84 Deansgate, Manchester M3 2ER
061-833 0427

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Our client is GSI, who are the largest computer service company operating in Europe today. With a wide range of hardware and products, the career pattern offered by GSI is really exceptional. The two positions advertised here offer a very real opportunity to get away from the often boring and mundane cul-de-sac in which so many programmers and operators find themselves. We have been asked to assist in the recruitment of two important positions within GSI's Motor Dealer Systems Division. Both these positions are based at GSI's United Kingdom headquarters in Camberley, Surrey.

DIBOL PROGRAMMER

Around £11,000 p.a.

We are looking for an experienced DIBOL programmer who will appreciate the opportunity provided in the GSI environment. The position involves the development and maintenance of new and existing systems and there is likely to be considerable customer contact. The ability to apply technical skill quickly to new applications is important, and a sympathetic and practical approach to customer problems is considered mandatory. At least two years' DIBOL programming experience is required and a knowledge of RSTS/E and of time-sharing would be very useful.

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Around £9,000 p.a.

We are looking for an IBM computer operator who wants to get ahead. This very interesting position, which involves significant customer liaison, offers a very realistic career development. You will be a self-starter who is able to get things done by personal control and patience. You will appreciate the importance of accuracy and be used to working to strict time schedules. You will welcome the opportunity to take responsibility and will retain the sense of humour that is necessary when working in a pressurised environment and at the same time dealing with customers.

Even today in the exciting world of computing it is difficult to find real career opportunities. Both of these positions offer that. Please send curriculum vitae to JVG Recruitment Ltd or telephone for application form.

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MANAGEMENT CONSULTANTS

LONDON **£15,000-£24,000**
We have been retained by four internationally famous Management Consultancies to find those special people who can bring a level of competence to often complex business and computer problems. The ideal candidate should have a degree, be under 36 and have verbal and written communicative skills and be prepared for some travel home and abroad. He (or she) should also have a background of technical competence in one or more fields such as Database Design, Telecommunications, Banking, Stockbroking, Insurance or Business Applications. Distributed networking experience would also be an advantage. Salary negotiable to £24,000. REF:CW11/6

TECHNICAL INNOVATION

TECHNICAL SUPPORT

HERTS **£14k + Car**
A very successful manufacturer requires well-qualified software specialists with Assembler experience to join their Technical Support Group. You should be capable of developing benchmark tests and improving performance by detailed tuning of these Systems. Sizing and computer selection are other important requisites. REF:CW11/7

AUTOMATION SPECIALISTS

C. LONDON **£11,000**
A major systems house with over 15 years' experience in Industrial Automation are seeking several process control specialists with at least two years' Assembler plus some high-level language experience. A science or engineering degree is preferred and upon joining you will receive excellent training and technical mini/micro experience. REF:CW11/8

TELECOMMS CONSULTANTS

LONDON **c. £16,000**
Our clients have a top-rate reputation envied throughout the telecomms world. They require a number of specialists with experience from: Packet switching, message switching, banking comms, International telex and networking, able to advise clients upon all aspects of CCITT standards and developments. REF:CW11/9

TECHNICAL PROGRAMMERS/MANAGERS

S. LONDON **£12,000+**
An Internationally-famous Computer Manufacturer is developing a range of micro-minis to be compatible with their major range. The successful candidates should have high-level language experience plus a systems design/software role in operating, computer or Data communications systems. They are also looking for two managers to control this development. REF:CW11/10

FREELANCE ASSIGNMENTS

Statistical applications in N. LONDON **FORTRAN on VAX/VMS**
Development work in Scotland **Image on HP3000**
Database programming in S. LONDON **COBOL T/P on DPS 7**

Please ring Alan on 01-458 8535 for Freelance details
Universal Computer Associates Ltd
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PL/1 PROGRAMMERS — **SLOUGH**
up to £9,500
An international manufacturing company is entering a major development phase involving extensive use of database and t.p. software on a world wide network of IBM mainframes and minis.
Programmers with at least 2 years PL/1 experience are required to play a significant role in this development and will assume a high degree of responsibility.
Applicants with less experience or experience of other languages will be considered for more junior positions.
Benefits include 25 days holiday, discount on company products together with genuine career prospects within this expanding department.
Ref: AC1

PROGRAMMER DEC RT11/CTS300 — **WEST LONDON**
to £8,500
Our client, a multinational management service organization, with a turnover of $300,000,000 develops advanced systems for particular market sectors using a mixture of hardware (DEC, IBM) software and telecommunications facilities.
An opportunity has arisen with their Travel and Leisure division for a Programmer to work as part of a team on the development of Hotel Reservation Systems.
Programming experience under the RT11 or CTS300 operating system is essential.
The position offers the opportunity to broaden experience and progress into either a client contact role or a more senior software development position.
Ref: KM2

SENIOR ANALYST/ PROGRAMMER HP3000 — **EAST BERKS**
to £16,000 + relocation assistance.
Our client is an autonomous subsidiary of a major international group. Currently they are seeking to employ a Senior Analyst Programmer to augment their young dynamic D.P. department.
Ideally candidates should be graduates with real-time experience on minis, preferably HP3000 using Cobol or Basic.
This represents an opportunity for high calibre results orientated professionals to take advantage of the freedom and opportunity presented by a rather different environment.
Ref: KT3

COBOL PROGRAMMERS IBM/Minis — **HOUNSLOW/STAINES LOCATION**
£7,500 — £10,500
This division of one of the world's largest computing services companies develops commercial systems which run on host IBM machines linked to a variety of mini computers.
In order to assist in the development of both on-line and batch systems the company is seeking to recruit Programmers, Analyst/Programmers with at least two years experience of commercial systems.
Working as part of a small development team in modern attractive offices successful applicants will be involved in all aspects of the systems they work on and will have client contact.
Ref: KM4

REAL TIME PROGRAMMERS DEC or CP/M — **READING**
COMPETITIVE SALARY
Our client is part of a group employing 2500 people and is itself expanding rapidly.
Specialising in the design and supply of high quality data capture systems to custom specifications the company is seeking to employ additional real-time programmers.
Candidates should have a good educational background and sound experience of real time software and assembler language. This experience ideally will be on DEC equipment or CP/M base hardware.
Applicants with degrees gained via a sandwich course including 1 years relevant experience in industry, may also be considered.
Ref: KT5

FORTRAN ANALYST/ PROGRAMMER — **NR. HEATHROW**
to £9,500+car.
A rare opportunity exists for a FORTRAN Programmer to move into a technically advanced commercial environment. You will be working on a variety of applications such as Viewdata, Electronic Mail, etc. and enjoy a high degree of client contact.
A knowledge of PDP11 computers and, in particular, RSX-11M, would be advantageous.
The company are one of the most progressive computing companies in the world and as such offer excellent career prospects.
Ref: AC6

MCL
McCOURT COUSINS LTD, 27-29 Greyfriars Road, Reading, Berkshire.
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